Boards II & III Study Guido

1. What is the causative organism of Syphilis?
    a. Treponema pallidum, a spirochete
2. What can accelerate the course of syphilis?
    a. AIDS
3. History/PE of syphilis
    a. Primary syphilis (10-90 days after infection): Presents with **painless ulcer (chancre)**
    b. Secondary syphilis (4-8 weeks after chancre): Presents with low-grade fever, headache, malaise, and generalized lymphadenopathy with a diffuse symmetric, asymptomatic (non-pruritic) **maculopapular rash on the soles and palms.** Highly infective secondary eruptions include mucous patched or **condylomata lata**
        i. Early latent (period of resolution of 1º and 2º syphilis to end of first year of infection
            1. No symptoms; +serology
        ii. Late latent (period of asymptomatic infection beyond the first year)
            1. No symptoms; + or – serology
            2. One third progress to 3º syphilis
    c. Tertiary syphilis (late manifestation appearing 1-20 years after initial infection
        i. Presents with destructive, **granulomatous gummas**.
        ii. Neurosyphilis includes **tabes dorsalis (**posterior column denegeration)
        iii. Mengitis, and **Argyll Robertson pupil** (constricts with accommodation but not reactive to light)
        iv. Cardiovascular findings; dilated aortic root, aortitis, aortic **root aneurysms,** aortic regurgitation

4. Which of the following is experienced during primary syphilis?
    a. Non-tender nodule- chancre
        i. The chancre is an ulcerated papule with a smooth, clean base; raised, indurated borders; and scant discharge
5. How is syphilis diagnosed?
    a. Dark field microscopy – ID motile spirochetes (only in 1º and 2º lesions)
    b. **VDRL/RPR** – rapid, cheap, 60-75% sensitivity (many false +)
    c. FTA-ABS – sensitive and specific (used as a secondary diagnostic test)
    d. TPPA – sensitive and specific (2º test of choice)
6. What is the treatment for syphilis?
    a. 1º/2º – Benzathine penicillin IM x 1 day (tetracycline or doxycycline x 14 days in case of PNC allergy)
    b. Latent infection: Benzathine penicillin once weekly x 3 weeks
    c. Neurosyphilis – IV Penicillin IV
7. A gram-negative intracellular diplococcus that can infect almost any site in the female reproductive tract. In men infection is limited to the urethra. Presents with **greenish-yellow discharge,** pelvic or adnexal pain and swollen Bartholin's glands. Men experience a purulent urethral discharge
    a. Gonorrhea
8. How do you diagnose gonorrhea?
    a. Gram stain and culture is the gold standard for any site
    b. Nucleic acid amplification tests
9. What is the treatment for gonorrhea?
    a. **Ceftriaxone (Rocephin)** – third generation cephalosporins
    b. Treat the sexual partner
10. What do you use to treat seizures?
    a. Benzodiazepines and phenytoin
11. What are the indications for Benzodiazepine?
    a. Anxiety, insomnia, alcohol withdrawal, muscle spasm, night terrors, sleepwalking
12. Benzodiazepine side effects
    a. Sedation, dependence and respiratory depression
13. Benzodiazepine antidote
    a. Flumazenil (Romazicon) 0.2 mg IV qmin x 1-5 dosesà **can precipitate withdrawal**
14. Which of the following are benzodiazepines?
    a. Chlordiazepoxide
        i. Others include: drugs ending in azepam, azepate (lorazepam, clorazepate)
15. Old lady, tense demarcated elevated on lateral aspect of foot. Acute superficial form of cellulitis involving the dermal lymphatics. Increased local temperature, decreases function, hyperemia, edema, and pain à **SYSTEMIC SIGNS!!!**
    a. Erysipelas
16. An acute, severe, rapidly spreading skin infection
    a. Cellulitis

17. What is the most common pathogen for cellulitis?

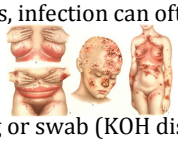
a. Streptococcus pyogenes and Staph. aureus.

18. Which of the following is least likely with redness of a surgical wound? Pt. goes to surgery, a week later- you see red wound, has somedrainage… LEAST likely cause of this wound

a. Candidiasis

19. Presents as superficial infection of the skin or mucous membrane in moist areas such as skin folds, armpits, the vagina, and below the breasts. Commonly called yeast infection or thrush. Often patient has a history of antibiotic use, steroid used, or diabetes. Presents with painless white plaques that cannot be easily scraped off orally. In the skin, it presents as a pink, circular, erythematous macules that converge. In infants, infection can often been seen in the diaper area and along the inguinal folds.

a. Candidiasis



Shrooms in Canada

20. How do you diagnose and treat Candidiasis?

i. Clinically diagnosed, confirmed by KOH preparation of scraping or swab (KOH dissolves the skin cells but leaves Candida untouched therefore candidal hyphae and pseudospores become visible).

ii. Oral candidiasis: oral fluconazole; nystatin swish and swallow

iii. Superficial skin: topical antifungals

21. Kid with rashes behind knee (popliteal fossa and anticubital regions) and asthma?

a. Eczema

i. A relapsing inflammatory disorder that is common in infancy. It is characterized by pruritus that leads to lichenification

ii. Atopic dermatitis is commonly associated with **asthma and allergic rhinitis**.

iii. Patients are at increase risk of secondary bacterial and viral infection

iv. Triggers include:

1. Climate, food, contact with allergens or physical or chemical irritants, and emotional factors.

22. Most common treatment when you find vesicles on the tip of the fingers related to an autoimmune disease.

a. Steroid

23. A thick-borne disease caused by the spirochete Borrelia burgdorferi. Usually seen during the summer months and carried by Ixodes ticks on white tailed deer and white footed mice. Endemic to Northeast, northern Midwest and Pacific coast. Presents with onset of fever, malaise, fatigue, headache, arthralgia's. Infection usually occurs after a tick feeds for > 18hours.

a. Lyme disease

i. What is the causative organism for Lyme disease?

1. Borrelia burgdorferi

b. Presents with migratory polyarthritis and tendonitis associated with an expanding rash (erythema chronic migrans) which begin as a small erythematous macule or papule that is found at the tick-feeding site and expands slowly over days to weeks. The border may be macular or raised, often with central clearing (bull's eye)

i. Primary (early localized lyme disease)

c. Presents with **migratory polyarthropathies**, **neurologic phenomena (Bell's palsy),** meningitis, myocarditis, conduction abnormalities (3rd degree nerve block)

i. Secondary (early disseminated disease)

d. Arthritis and subacute encephalitis (memory loss and mood change)

i. Tertiary (late disease)

e. How is Lyme disease diagnosed?

i. Clinical diagnosis of erythema migrans

ii. Elisa and Western blot

1. + ELISA denotes exposure but it is not specific

2. Western blots sent without ELISA have high rates of false positives

f. What is the treatment for Lyme disease?

i. Doxycycline (100mg PO BID x 14-21 days) with ceftriaxone (2g IV qd x 14-21 days - DOC for CNS involvement)

ii. **Tetracycline 250mg QID**

iii. **Amoxicillin 500mg TID PO x 3 weeks (DOC for early disease)**

24. A life threatening autoimmune condition characterized by an intraepidermal blister leading to widespread painful erosions of the skin and mucous membranes. Antibiotics are directed against desmoglein molecules responsible for keratinocytes adherence,leading to loss of cellular attachment. Usually middle aged (40-60)

a. Pemphigus vulgaris

i. Which drug can rarely cause Pemphigus vulgaris?

1. **Penicillamine** (rarely causes it, but still a cause of it nonetheless, remember that!)

2. ACE inhibitors

ii. How is pemphigous vulgaris diagnosed?
1. Clinical picture with + Nikolsky's sign (the ability to produce a blister by rubbing skin adjacent to a natural blister).
2. Skin biopsy that shows acanthalysis (intraepidermal split with free floating kerationocytes in the blister
3. ELISA and immunofluorescence are confirmatory for antidesmoglein antibodies.

iii. What is the treatment for Pemphigous vulgaris?
1. **Long term corticosteroids** are used at high doses in combination with steroid-sparing agents (mycophenolatemofetil and azathioprine) introduced early to decrease corticosteroid side effects

25. Osteomalacia seen in children, usually due to vitamin D deficiency but also renal disease. It typically affects children 6-12 months old, and will be accompanied by muscle tetany, irritability, and weakness. Physical development is impaired, bone growth is impaired and deforms. Cartilage in the epiphyseal plates hypertrophies and is surrounded by edema

a. Rickets
i. **What can be seen on X-ray in children with Rickets?**
1. **Rachitic rosary about the costo-chondral junctions**
2. **Proximal calcification of the metaphyses is absent, and margins are frayed and cupped**

ii. What Rickets has in common with Pagets?
1. Increase width or length or coarsening, Bowing

26. Abnormal bony architecture caused by increased osteoblastic and osteoclastic activity. More common in the elderly

a. Paget disease (Osteitis deformans)
i. What malignant bone degeneration may be seen with Paget disease?
1. Osteosarcoma
ii. What are the stages of Paget?
1. Destructive – osteolytic
2. Mixed – osteolytic and osteoblastic
3. Sclertotic – osteoblastic

27. What does increase alkaline phosphate and hydroxyproline in urine indicate?
a. Metabolic bone disease – significant elevated in Paget's disease

28. Intraoperative causes of fever?
a. Inflammatory process of the surgical procedure itself
b. Pain
c. Transfusion reaction
d. Malignant hyperthermia
e. Pre-existing sepsis

29. Fever
a. 0-6 hours – Pain, rebound from cold operating room, anesthesia reaction, endocrine cause)
b. 24-48 hours – atelectasis, aspiration pneumonia (after general), dehydration, constipation
c. > 72 hours – infection, DVT, thrombophlebitis from IV, UTI, drug allergy

30. The 5 "W's" of Post-Op Fever
a. Wind – atelectasis, aspiration pneumonia, PE (24-48 hours)
b. Wound – Surgical site infection, thrombophlebitis (IV site), pain (>72 hours)
c. Water – UTI, dehydration, constipation (24-48 hours)
d. Walk – DVT (>72 hours)
e. Wonder drugs – most common are antimicrobials and heparin

31. Patient has post surgery who has fever 1 week after? Most likely cause of fever
a. Atlectasis (24-48 hours)
b. Infection
c. PE (24-48 hours)

32. Patient who has fever 24 hrs after surgery, most likely cause ?
a. **Atelectasis** (24-48 hours)
b. DVT (>72 hours)
c. Infection (>72 hours)

33. Gastroparesis (which reduces the ability of the stomach to empty its content) is associated with:
a. Diabetes – patients with severe autonomic neuropathy have an increased incidence of gastroparesis and aspiration
b. Amyloidosis – generic term referring to extracellular deposition of protein fibrils. Classically a disease of the elderly. The major sites of amyloid deposition are in the kidneys, heart, and liver

34. A broad term used to describe several static **non-progressive neuromuscular disorders resulting from brain damage before, during, or immediately after birth.** Most common movement disorder in children. The most common is **pyramidal (spastic) accounts for 75% of cases**. Associated with seizures disorders, behavioral disorders, hearing, or vision impairment, learning disabilities and speech deficits. Affected limbs may show hyperreflexia, + Babinski, increase tone/contractures and **scissors gait** are common.

- **a. Cerebral palsy**
  - **i. Cerebral palsy is NOT associated with?**
    - **1. High APGAR scores, it is associated with low APGAR scores**
      - **a. APGAR: a rapid scoring system that helps evaluate the need for neonatal resuscitation (0-2 at one and five minutes after birth)**
        1. A: appearance (blue/pale, pink trunk, all pink)
        2. P: pulse (0, <100, >100)
        3. G: grimace
        4. A: activity
        5. R: respiratory effort

35. Increased bone density synonymous with?

- **a. Sclerotic**

36. Benign fibrohistocytic tumors composed of connective tissue, stromal cells and giant cells. Usually during the 3rd and 4th decades of life. Usually originates in the metaphysis but quickly extends into the epiphysis and subchondral bone. Symptoms include pain, with possible swelling and limitation of motion. May be associated with Paget's disease. Presents as eccentric osteolytic lesion extending to the subchondral bone (soap bubble on x-ray)

- a. Giant cell tumor

37. All of the following are true of Giant cell tumor

- **a. Forms in the metaphysis and extends into the epiphysis**
- **b. It is most likely to transform into aggressive tumor**
- **c. Treatment is curettage and pack with bone chips**
- **d. Eccentrically located within medullary canal**
- **e. Benign but locally aggressive, lytic lesion with ground glass, "soap bubble" appearance**
- **f. May destroy cortex and have soft tissue mass**
- **g. 3rd to 4th decades of life**
- **h. Painful**

38. **An 11-year-old girl presented with this firm no fluctuant mass over her posterior medial left ankle that had been present for 5 months and had not increased in size. The mass was not transilluminating. Findings on frozen section were consistent with a benign giant cell tumor of the tendon sheath. What is the treatment?**

- **a. Marginal excision of giant cell tumor of the tendon sheath is the treatment of choice**
- b. **Curettage and pack since total removal of the tumor may cause damage to the tendons or other structures involved.**

39. **Which three antibiotics need renal dosing?**

- a. **Gentamycin**
- b. **Vancomycin**
- c. **Piperacillin**

40. **This disorder mimics acute gouty attacks, and rarely affects the calcaneus, however, can affect the talocalcaneonavicular region producing an osteoarthritis profile demonstrating joint space narrowing, and subchondral cyst formation. AKA chondrocalcinosis. Similar to gout but tends to run longer course (reaches maximum severity at 1-3 days and resolves in 1 week or longer. The knees are often involved (50%) followed by the ankles, wrist and shoulder. Assoc w/ high grade fever**

- a. **Calcium pyrophosphate dehydrate deposition (CPPD)- pseudogout**

41. Which of the following is true about pseudogout?

- **a. Occurs primarily in large joints**

42. What kind of deficiency is found in a confused, old, homeless, alcoholic man?

- **a. Thiamine deficiency**
  - **i.** 2 major manifestations: both are most often caused by excessive alcohol consumption.
    - **1.** Cardiovascular: wet and dry beriberi
      - **a.** Dry Beriberi symptoms: pain, tingling, or loss of sensation in hands and feet, muscle wasting with loss of function or paralysis of the LE, and potential brain damage and death.
    - **2.** Nervous system: Wernicke-Korsakoff syndrome
      - **a.** Alcohol related brain damage affecting language and thinking
  - **ii.** Treatment: 100mg IV of thiamine

43. 32yo female with the triad (SIN) of scanning speech, intention tremor, nystagmus with a relapsing, remitting course.

- **a. Multiple sclerosis**
  - **i.** Mostly white matter of cervical region; random and asymmetric lesions, due to demyelination; scanning speech, intention tremor, nystagmus
  - **ii.** Female ration is 3:2; onset is btw 20 and 40 years of age.
  - **iii.** Subtypes are relapsing-remitting
  - **iv.** Limb weakness, optic neuritis, paresthesias, diplopia, vertigo, nystagmus, gait unsteadiness, urinary retention, sexual and bowel dysfunction, depression, and cognitive impairment
- **b.** Diagnosis
  - **i.** MRI shows multiple, asymmetric, often periventricular while matter lesion, especially in the corpus callosum. Active lesions enhance with gadolinium
- **c.** Treatment:
  - **i.** Corticosteroids for acute exacerbations
  - **ii.** Immunomodulators alter relapse rates (interferon β_{1a} – Avonex/Rebid; interferon β_{1b}- Betaseron; and copolymer -1Copaxone).
  - **iii.** Mitoxantrone – for worsening relapsing/remitting or progressive MS.

44. What is the antidote agent for benzodiazepine?

- **a. Flumazenil**

46. Has amnestic affect; 4 times more potent than Valium, onset 3-5 minute, half-life 1.2-12.3 hours, last for 30-40 minutes. Sedative dose 2.5-7.5 mg; this is a short acting benzodiazepine

- **a. Versed (Midazolam)**

47. HPA axis suppression manifests as what in surgery?

- **a. Hypotension and cardiovascular collapse**

48. What is the treatment for anaphylaxis?

- **a.** Epinephrine (0.3-0.5 ml SubQ of 1:1,000 solution + antihistamine)

49. Contraindications for epinephrine

- **a. Thyrotoxicosis**
- **b.** Use cautiously in patients with
  - **i.** Hyperparathyroidism
  - **ii.** Arteriosclerotic cardiovascular disease
  - **iii.** Hypertension
  - **iv.** Peripheral vascular disease
  - **v.** Should be avoided in-patient receiving halothane (since halothane sensitizes the myocardium in the presence of exogenously administered catecholamines).

50. UMN, what can be ruled out?

- **a. Multiple sclerosis**
- **b. Cerebral palsy**
- **c. Stroke**

51. LMN Problem- demyelination of nerves; effects the peroneus brevis and the last muscle it effect is Peroneus longus. They get a drop and a cavus foot.

- **a. CMT (Charcot Marie Tooth Disease)**
  - **i.** Inherited familial neuromuscular disease that affects peripheral nerves, causing slowing of sensory and motor nerve conduction; progressive in nature
  - **ii.** Autosomal dominant (most common), x-linked recessive, autosomal recessive (least common)
  - **iii.** Diagnosis is clinical
    - **1.** Claw toes
      - **a.** Weak intrinsic and to a lesser degree EDL with normal long flexors leas to MPJ extension and IPJ flexion
      - **b.** EDL and EHL are recruited to DF the AJ which pull against the weaker intrinsics
    - **2.** Cavus
      - **a.** Strong peroneus longus overpowers the weak tibialis anterior causing plantarflexion of the first ray and a FF cavus
      - **b.** Strong tibialis posterior overpowers the weak PB causing an adducted forefoot.
      - **c.** There is then shortening and fibrosis of the plantar muscles and contraction of the plantar fascia

3. RF varus
    a. Overpowering of the TP and the long flexors; may be a secondary deformity and become rigid over time
4. Ankle instability
    a. Weak PB contribute; Varus heel put ankle at risk
5. Foot Drop
    a. Thin lower legs (chicken legs)
    b. Stork leg deformity, inverted Champaign bottle appearance
    c. Sensation loss my occur; vibratory and proprioception diminished
    d. Pattern of muscle weakness
        i. Anterior group: peroneus brevis
        ii. Posterior muscles, PL retain normal strength

52. Side effect of spinal anesthesia? Knocks out sympathetic part of the nerve.
- **a. Urinary retention**
- **b.** Complication of spinal anesthesia**:** headache, hypotension, cauda equine syndrome, and infection.

53. Patient ate within 3 hrs, what kind of anesthesia dyou give?
- **a. Spinal**

54. What are the three radiographic patterns of bone destruction?
- **a.** Geographic – well defined, short zone of transition; benign or low grade malignancy
- **b.** Moth eaten – more aggressive, intermediate zone of transition; benign or malignant
- **c.** Permeative – poorly defined, wide zone of transition; malignant

55. Indication of less aggressive lesion?
- **a. Geographic destruction**

56. Where is largest branch of femoral blocked?
- **a. Medial column**

57. How would you treat a Jones fracture without trabeculation in athlete?
- **a. IM screw**

58. What do you do if you need a 3.5 screw and your 2.7 failed?
- **a. Overdrill with 3.5, tap for 3.5 (no need to underdrill, as underdrill for 3.5 is 2.5)**

59. Three contrast materials used in nuclear medicine
- a. Indium
    - **i.** WBC and acute infections (binds to WBC cytoplasmic components)
    - **ii.** Seen at 24 hours
- b. Technetium
    - **i.** Bone
- **c.** Gallium **-** More bacterial
    - **i.** Uptake by **siderophore** complex (direct bacteria) and **lactoferrin** (protein released by bacteria)
    - **ii.** What does gallium 67 tests for? Acute inflammation and infection
    - **iii.** How long does it take for a gallium 67 test to work? 2-3 days
- **d. NOT Gadillinium (this is for MRI)**
    - **i.** When to use Gadilinium for MRI?
        1. Neuroma (will be darkened)
        2. Fibroma (will light up)

Gallium ≈ Indium

60. Gallium test and OM
- **a. Gallium is a WBC tracer, and is better than indium for OM, but more harmful**

61. "Ground glass" tumor matrix is often seen with what bone tumor?
- **a. Fibrous dysplasia**
    - **i. Benign, usually unilateral, geographic, fibro-osseous lesion with ground glass matric**
    - **ii. Presents with deformity**
    - **iii. Sometimes painful secondary to fracture**
- **b.** Why do pathological fractures and rickets like bowing occur in fibrous dysplasia patients?
    - **i.** Normal osseous tissue is replaced by fibrous tissue thus weakening the bone
- **c.** Fibrous dysplasia leading to a varus deformity of the femur is also known as
    - **i.** The shepherd's crook deformity

62. X-ray calcaneal bone cyst? (basically asking what view is best to visualize calcaneus)
- **a. Lateral, calcaneal axial**

63. Method for calculating fluid repletion in burn patients; used for second and third degree burns.
- **a. Parkland formula àFluids for the first 24 hours = 4 x patients weight in kg x % BSA**
- **b. Give 50% of fluids over the first 8 hours and the remaining 50% over the following 16**

64. Use parklands formula to calculate how much fluid a 70 kg person with 25% second and third degree burns needs.

a. 7000

i. 4 x 70kg x 25%= 7000

65. Distal tibia sepinginous, smoke like line?

a. IM infarct

66. A 7mm lesion, itchy and bleeds on the dorsum of the foot, you suspect it malignant what should be done?

a. EXCISIONAL biopsy

67. What is the difference between incisional and excisional biopsy?

a. Incisional – only a portion of the lesion is removed

b. Excisional – the entire lesion is removed

68. What are the different biopsy techniques?

a. Punch

i. Convenient and effective method of tissue extraction and may be either incisional (usually) or excisional

ii. In the lower extremity, the 4mm punch is typically employed

iii. When using the punch, skin surrounding lesion need to be stretched taut, perpendicular to the wrinkle lines before circular punch is inserted.

iv. A punch defect of 4mm or greater should be sutured, whereas a defect less than 4mm will heal via secondary intention.

b. Shave

i. Used to remove that portion of the skin elevated above the plane of surrounding tissue and is useful for biopsy or removing many benign epidermal growths.

ii. Can be used for diagnosis of basal cell carcinoma

iii. #15 blade is used to shave the lesion and a margin of apparently normal surrounding tissue.

c. Curettage

i. Used for the removal of cutaneous lesions such as warts, seborrheic keratosis, and even malignancies such as BCC or SCC.

ii. The curette is a spoon-like instrument with a sharp rim. Typically 4mm curette is used

d. Surgical excision

i. Should be considered whenever the lesion displays active (spreading) margins and the border with normal appearing skin is to be surveyed or if the lesion is friable or very sclerotic or whenever it is necessary to include full thickness skin to the level of, and including a portion of, the subcutaneous fat layer

69. Most common life-threating dermatologic disease; incidence has been increasing throughout the world. Risk factors include short, intense burst of sun exposure and the presence of congenital melanocytic nevi, an increase number of nevi, or dysplastic nevi.

a. Melanoma

70. Know Clark's and Breslow's staging of Melanomas

71. The depth of the lesion decides the aggression of the melanoma

a. True

72. Patient has suspected DVT. What is the initial test?

a. Ultrasound of calf – (Venography is gold standard-which is basically like an angiography, only of the vein, hence the term venography, duh!)

73. Increase pressure within a confined space that compromises nerve, muscle, and soft tissue perfusion. Occurs primarily in the anterior compartment of the lower leg secondary to trauma to the affected compartment.

a. Compartment syndrome = **pain out of proportion**

i. Dx: Measure compartment pressures (greater or equal to 30mmHg); measure delta pressures (diastolic pressure – compartment pressure < 30 mmHg)

a. 6 P's of Compartment Syndrome (pain, pulselessness, pallor, paresthesia, pareisis, paralysis)

ii. Tx: Immediate fasciotomy to decrease pressure and increase tissue perfusion

74. Which is not recognized with acute compartment syndrome?

a. Overall HTN

75. Which is the threshold for compartment syndrome?

a. 30mmHg

76. Contraindications to Tourniquet use would be?

a. Infection

b. Open fracture

c. PVD
d. Hypercoagulability
e. Skin grafts application where bleeding must be distinguished
f. Previous popliteal or dorsalis pedis bypass grafting
g. Sickle cell disease

77. What is the maximum tourniquet time?
a. 90-120 minutes
b. After that, allow 5 minutes of perfusion for every half hour over
c. 2 hours max-then allow 20 minutes breathing time

78. Virchow's triad
a. Venous stasis = tourniquet, immobilization
b. Endothelial wall damage/abnormality= surgical manipulation, trauma, smoking
c. Hypercoagulability= birth control, history of DVT, coagulopathy

79. Contraindications to MRI?
a. Cochlear implants
b. Pacemaker
c. Implant in the eye

80. If 12 inches is 1 rad, 24 inches is
a. 0.25

81. Charcot Classifications – Eichenholtz (1966)
a. Stage 0 – High risk pre-Charcot
i. Radiograph unremarkable
ii. Clinically sudden onset of **non-pitting edema, erythema, calor, +/- pain, bounding pulses, intrinsic atrophy**
iii. Normal skin temperature: 94; can be increased by 12
iv. Uptake in all three phases of Tc-99 bone scan
b. State 1- Acute/developmental
i. Radiographs: capsular distention, fragmentation, debris, subluxation
ii. Clinical: Red, hot, swollen foot with joint laxity
c. Stage 2 – Coalescence
i. Radiograph: sclerosis, resorption of debris, fusion
ii. Clinical: Subjectively decreased red, hot, swollen
d. Stage 3 – Reconstruction
i. Radiograph: decrease sclerosis (with increased vascularity) and remodeling
ii. Clinical: Decreased joint mobility with increased stabilization

82. MRI
a. T1: tendons normally have a uniform low intensity (very black). Will be uniform with variable high intensity signal with injury
b. T2: Tendons are normally relatively low intensity. Will light up with high intensity with ijury
c. Remember the magic angle phenomenon – Any MRI signal shot at 55 degrees to the course of the tendon will show a false positive damage signal. Very common with peroneals

83. What is the best study for evaluating avascular necrosis?
a. MRI- decreased signal intensity within medullary bone in both T1 and T2 images

84. What causes increased signal intensity on a T1-image?
a. Fat

85. What causes increase signal intensity on a T2 image?
a. Fluid, infection, inflammation, tumor (FIIT)

86. For MRI, what are the main indications for STIR imaging?
a. Edema in high lipid regions, such as bone marrow and also for evaluating cartilage.

87. T1 image what is least signal?
a. Synovial fluid

88. What is hyperechoic (white)on a ultrasound?
a. Bone

89. On an ultrasound which would show high echogenicity?
a. Bone
i. Echogenic is the ability to bounce an echo, return the signal in ultrasound.
ii. Echogenicity is higher when the surface bouncing the sound echos reflects increased sound waves. Tissues that have higher echogenicity are called hyperechogenic and are usually represented with lighter colors on US
iii. In contrast, tissues with lower echogenicity are usually represented with darker colors
iv. Areas that lack echogenicity are called anechogenic displayed as completely dark

90. Ultrasound

a. Tendon normally appears hyperechoic to muscle

b. Look for discontinuity of fibers, possible alternating hyperechoic/hypoechoic bands, and an area of intensely hyperechoic hematoma

91. What can be seen on calcaneal stress fracture?

a. Poorly organized sclerosis

92. Calcaneal fracture

a. More common in males ~45 yrs of age as a result of falling from a height.

b. Most common tarsus fracture (~60%) with 75% involving the STJ

c. 20% of calcaneal fractures are associated with a spinal fracture between T12 and L2 (L1 most common).

d. **Mondor's sign:** ecchymosis going from the malleoli to the sole of the foot, pathognomic of calcaneal fractures

e. **Bohler's angle:** normal is 18-40; average ~30-35 degrees, decreases in calcaneal fractures.

i. Measures depression of posterior facet

f. **Gissane's angle:** normal is 120-140 degrees; a fractures calcaneus will cause this angle to increase.

g. **Classification**

i. **Rowe – primarily utilized for extraarticular fractures**

1. **Type I –** medial tuberosity fracture
2. **Type IB –** sustentaculum tali fracture
3. **Type IC –** anterior process fracture
4. **Type IIA –** posterior beak fracture (no Achilles involvement)
5. **Type IIB –** posterior beak fracture (Achilles involvement)
6. **Type III –** Extra-articular body fracture
7. **Type IV –** Intraarticular body fracture without depression (ORIF required)
8. **Type V –** Intraarticular body fracture with depression (comminution – ORIF required)

ii. **Essex-Lopresti – describes intra-articular fractures: tongue type and joint depression**

1. **Type A -** Tongue fracture (vertical force)
   a. Occurs when talus is driven straight down into the neutral triangle
   b. Talus driven into calcaneus, creating 1o fracture line that extends from the apex of critical angle of Gissane to the plantar cortex of the calcaneus
   c. Secondary fracture line extends posteriorly from primary line to the posterior calcaneal cortex producing the tongue type fracture
2. **Type B -** Joint depression (posterior force)
   a. Talus driven into calcaneus, creating 1o fracture line that extends from the apex of critical angle of Gissane to the plantar cortex of the calcaneus
   b. Secondary fracture line extends posteriorly from primary line and exits on the superior aspect of the calcaneus, surrounding the posterior facet and causing it to impact into the body of the calcaneus, exploding it medially and laterally into fragments.

iii. **Sander's -** Based on **CT coronal and axial sections**. The posterior facet is divided into 3 sections by lines A and B and line C at the sustentaculum tali

1. **Type I** – Any non-displaced intraarticular fracture
2. **Type II A,B,C** – 1 Fracture through posterior facet (creating 2 fragments)
3. **Type III AB, AC, BC** – 2 fracture through poster facet (creating 3 fragments)
4. **Type IV** – 3 or more intraarticular fracture lines (comminution)

93. What do you order with calcaneal fracture?

a. Lumbar spine X-Rays (AND Refer to Ortho to check the vertebra)

94. Vocabulary definition

a. Osteomyelitis - Inflammation of the medullary canal

b. Cloaca – tract through an involucrum

c. Involucrum – sheath of bone surrounding pus/inflammation

d. Sequestrum – piece of dead bone floating in pus/inflammation

95. What is an acute bone change in osteomyelitis?

a. Osteolysis – the pathological destruction or disappearance of bone tissue

96. Radiographic OA?

a. Earliest signs include: osteolysis, cortical erosions, and periosteal reaction

b. Asymmetric joint space narrowing, subchondral cyst formation, subchondral sclerosis, osteophyte formation.

97. Which can be associated with neuropathy? Pick three.

a. DM, uremia, HIV (remember, DANG THE RAPIST)

98. What is the function of epinephrine?

a. Raises maximum dose; extends life of local

b. Epinephrine advantages:

i. Reduces the vascularity locally at the site of the injection (due to vasoconstriction)
ii. Reduces the absorption rate of the local anesthetic
iii. Permits a higher allowable single dose of local anesthetic to be used
iv. Increase duration of action of the block

c. Epinephrine disadvantages
i. Use cautiously in patients with hyperparathyroidism, arteriosclerotic cardiovascular disease, hypertension, and peripheral vascular disease
ii. Creates vasospasm in the end arterioles which could lead to tissue necrosis, so should be diluted in the digits to 1:2,00,000-1:400,000 or not used
iii. Can create reactive hyperthermic reaction
iv. Should be avoided in patients receiving halothane

99. Permits more rapid spread of solutions into the tissues, to facilitate regional block anesthesia. Reduces the duration of action when used with local anesthetics for nerve blocks
a. Hyaluronidase (Wydase)

100. An increase in the number of immature PMN's or band cells. An example of Infection, toxemia, and hemorrhage will cause what kind of shift?
a. Left shift

101. Liver disease and megaloblastic and iron deficiency anemias will cause what kind of shift?
a. Right shift

102. **What are causes of macrocytic, megaloblastic anemia?**
a. **Vitamin B12/folate deficiency**

103. **Homeless man with anemia is most likely due to?**
a. **Nutritional deficiency**

104. A thick-borne disease caused by **Rickettsia rickettsii** and by the American dog tick. The organism invades the endothelial lining of capillaries and causes small vessel vasculitis
a. Rocky Mountain Spotted Fever
i. Clinical diagnosis should be confirmed with indirect immunofluorescence of rash biopsy
b. Treatment:
i. Doxycycline or Chloramphenicol

105. Presents with headache, fever, malaise, and rash. The characteristic rash is initially macular (beginning on the wrists and ankles) but becomes petechial/purpuric as it spreads centrally. Altered mental status or DIC may develop in severe case. What causes these symptoms?
a. Rickettsia rickettsii

106. Pt. who has been hiking and suffers from intestinal cramps and watery diarrhea
a. Giardia

107. Pt. who has been hiking and suffers from intestinal cramps and bloody diarrhea
a. Shigella

108. Patients with sickle cell anemia, and other hemoglobinopathies, have a higher incidence of osteomyelitis with which organism
a. Salmonella

109. 31 inv and 6 ev and 6 FF to RF and 4 TIb varum what is the relationship of forefoot to ground? 6-37/3 = -6 **Stj neutral =eversiontotal range of motion/3= -6 + -6 (for forefoot to rearfoot) NCSP -6 + -4=-10 (-4 degrees of tibial varum which is lower 1/3 of tibia to the ground) -10 + -6 (forefoot to rearfoot) = -16**
a. 16 degree FF to ground relationship

110. What do you do with 20 IM angle and hypermobility?
a. Lapidus
i. Fusion of the first metatarso-cuneiform joint
ii. Indicated for increased IM and pain at the first metatarso-cuneiform joint

111. Juvenile HAV
a. Have decreased IM angle, increased HAA, increased PASA

112. Dorsomedial hinge plantarflexes CBO

113. Good for examining the cristae deep between the sesamoids, plantar aspect of the sesamoids and their relationship with the first metatarsal head
a. Sesamoid axial

114. A painful benign fibrotic enlargement of one of the common digital nerves caused by shearing forces of adjacent metatarsal heads. This process most commonly affects the 3rd common digital nerve.
a. Morton's neuroma
i. More common in females, possible due to shoe gear
ii. Most common in the 4th and 6th decade of life
iii. Pain is described as burning, cramping, or sharp and frequently radiates to the toes.
iv. Patient may feel as though they are walking on a wrinkle in their sock

v. Pain is worse in shoes and upon dorsiflexion of MPJ's (high heels)
vi. Lateral squeeze test (point tenderness upon palpating of the plantar aspect between the metatarsal heads while squeezing the metatarsal heads together)
vii. Mulder's sign: silent palpable click
viii. Pain relieved by removing shoe and massaging affected area
ix. Treatment for Morton's neuron
1. Modification of shoe gear
2. Orthotics, strapping and padding
3. Corticosteroids injections
4. Oral anti-inflammatory agents
5. Cold therapy, stretching and other PT modalities
6. Surgery: neurectomy, EDIN

115. A female patient had a neuroma that was excised in OR with a dorsal incision neuroma, one day later her pain is 10/10? What is the most common cause of the pain?
a. Hematoma

116. IV Anesthetic
a. Propofol – highest clearance
b. Pentothal – lowest clearance
c. Etomidate
d. Ketamine - causes hallucinations
. Midazolam – short half-life
f. All IV agents depress respiration

117. All of the following are IV sedatives except?
a. Metocloperamide
i. Treats gastric esophageal reflux disease (GERD). Also treats nausea, vomiting, and heartburn caused by a stomach problem called gastroparesis in patients with diabetes.

118. What should a patient take before surgery?
a. Their beta blocker

119. Which blood type can receive from anybody?
a. AB

120. Which blood type is universal donor?
a. O

121. Caused by a deficiency of TSH, thyroid hormone, or iodine. In infants the disorder is called cretinism. In adults the disorder causes edema, dry skin, coarse hair, lethargy, fatigue, paresthesia, and bradycardia. Tarsal tunnel syndrome is also a common finding
a. Hypothyroidism

122. What is one of the complications of hypothyroidism?
a. Myxedema coma

123. What nerves are blocked in a 3rd digital block? (Be careful of the wording in a question like this. The nerves blocked in a 3rd digit block vs. nerves blocked in a 3rd interspace block are slightly different)
a. Medial plantar, intermediate dorsal cutaneous, medial dorsal cutaneous

124. Female patient that had bunion surgery presents with numbness and tingling; what nerve is most likely damaged in bunion surgery?
a. Medial dorsal cutaneous

125. Which type of nonunion needs immobilization?
a. Hypertrophic non-union results from excessive motion, so eliminating movement will allow complete bone healing.
b. Atrophic u shave off the sclerotic bone with Internal fixation with a bone bone stimulator
i. Atrophic non-union is a long term result of insufficient vascularity that causes fracture ends to become osteopenic and atrophic
ii. Apply bone graft + mechanical stability

126. What study can distinguish between a hypertrophic and an atrophic non-union?
a. Bone scan
i. Positive for hypertrophic
ii. Negative for an atrophic (avascular) non-union

127. An entrapment or compression neuropathy within the tarsal tunnel beneath the flexor retinaculum (laciniate ligament). Pins-and-needles, numbness, burning, or shooting pains over the entire plantar foot. Symptoms exacerbated by prolonged weight bearing, walking or running and forced eversion.
a. Tarsal tunnel syndrome
i. The tibial nerve divides into three branches beneath the flexor retinaculum
1. Medial plantar nerve

2. Lateral plantar nerve
3. Medial calcaneal nerve

ii. Tarsal tunnel borders
1. Flexor retinaculum (laciniate ligament) – Medially and Posteriorly
2. Calcaneus and posterior aspect of talus – laterally
3. Distal tibia and medial malleolus – anteriorly

iii. Hoffman Tinel's sign: a tingling in region of distribution of the involved nerve with light percussion, results in the paresthesias distal to the site of percussion

iv. Valleix Phenomena: a nerve trunk tenderness above and below the point of compression, with paresthesias proximal and distal to the point of percussion

v. Treatment:
1. Conservative:
a. NSAIDS, local PT nerve blocks with infiltration of corticosteroids
b. Control pronation (arch supports, orthotics)
2. Surgically
a. Involves a longitudinal incision of the flexor retinaculum.
b. Any space occupying lesions are excised.
c. Care must be taken not to damage the medial calcaneal branch of the tibial nerve as it penetrates the flexor retinaculum to provide sensory innervation to the medial heel.
d. The flexor retinaculum should not be sutured back after surgery to prevent constriction of the nerve.

128. Which is not a factor in tarsal tunnel syndrome?
a. Os peroneum

129. What muscles comprise the 2nd layer of foot?
a. QP and lumbricales

130. What layer of the foot does FDL run?
a. 2nd layer – it is the origin of the lumbricals and the insertion of the QP

131. Angle between Hallux proximal and distal phalanx?
a. HIA – Hallux abductus interphalangeus angle
i. Normal angle = 10
ii. Procedure of choice: Distal Akin (To fix increase in DASA, do Proximal Akin)

132. Angle between the first metatarsal and 2nd metatarsal. Normally measuring 8-12 degrees
a. Intermetatarsal angle
i. IM > 16 =base wedge osteotomy

133. Metatarsus Adductus angle is best measured by:
a. Bisection of the second ray and the axis of the lesser tarsus

134. Angle between the 1st metatarsal and the proximal phalanx
a. Hallux Abductus angle (HA)
i. Normal = 0-15

135. Proximal articular set angle is normally
a. < than 8 degrees

136. Which don't you use accommodative orthotic?
a. Drop foot

137. What is the windlass action of the plantar fascia?
a. This is the action that raises the longitudinal arch as the MPJ are dorsiflexed and the plantar fascia tightens.
i. In a flexible flatfoot Cymwindlass works

138. How do you reduce CC abduction? CC abduction is a flatfoot feature.
a. Invert and supinate STJ

139. Cyma line is made up of what joints?
a. S-shape line formed by the articulation of the T-N & C-C joints
b. Pronation = moves line anteriorly
c. Supination = moves line posteriorly

140. Symmetric, progressive, polyarticular, and degenerative inflammatory arthritis between the 3-4th decade, more commonly in females, pain first thing in the morning, stiffness after rest and reduced with activity is an indication of
a. Rheumatoid arthritis
i. Rheumatoid nodules (25%)
ii. Nail folds infarcts, splinter hemorrhages
iii. Swan neck deformities – flexed DIPJ and extended PIPJ

iv. Boutonniere deformities – extended DIPJ and flexed PIPJ

b. Laboratory findings

i. Rheumatoid factor = positive

ii. RBC – slight to moderate anemia

iii. WBC – elevated in acute cases and normal to decreased in chronic

iv. ESR & CRP- moderate to marked elevation

c. RA has what signs on x-ray?

i. Symmetric CC joint narrowing

ii. Peri-articular edema

iii. Periosteal elevation and ossification

iv. Marginal erosions

v. Subluxation and contractures (Swan neck deformity)

vi. Fibular deviation of digits

vii. Osteoporosis

viii. Symmetric joint space narrowing and destruction (late stage finding)

141. Which of the following you would not find in RA?

a. Bouchard's nodes (OA) – bony protuberances at the margins and dorsal surface of the PIPJs

b. Heberden's nodes (OA)- bony protuberances at the margins and dorsal surface of the DIPJs

142. Ages of Frequency of Tarsal Coalitions

a. Talocalcaneal (STJ coalition): 12-16 yo MOST COMMON

i. Intra-articular coalitions traditionally considered indication for fusion

1. Which T-C facet is most commonly fused?

a. Medial>anterior> posterior

b. Calcaneonavicular Coalition (C-N bar): 8-12 yo.

i. Most symptomatic

ii. MO view to evaluate "comma sign" à protrusion of calcaneus toward navicular

iii. Anteater nose sign: lateral view

iv. Excision of coalition with interposition of EDB

1. Later curvilinear or Ollier type of incision is made over sinus tarsi

2. EDB origin reflected off calcaneus, retracted distally and gain access to underlying calcaneal navicular bar

3. Must preserve the TN and CC joint ligaments

4. In calcaneaonavicular 1A (Tachdjian's classification)à resection arthroplasty is procedure of choice

c. Talonavicular Coalition (T-N): 3-5 yoà 3rd most common

i. Intra-articular coalition

ii. Asymptomatic; if symptomatic, resection then fusion, as well as fusion of TC and CC joints recommended

143. Arthritic "beaking" secondary to middle facet coalition

a. Calcaneocuboid coalition: intra-articular

b. Double arthrodesis of TN and TC joint may be indicated

144. What percentages of tarsal coalitions are bilateral?

a. 50%

145. What are the clinical symptoms of tarsal coalitions?

a. Pain

b. Limited ROM of STJ and possibly MTJ

c. Peroneal spastic flatfoot

146. What are radiographic findings of tarsal coalitions?

a. Rounding of lateral talar process

b. Talar beaking due to increased stress on talonavicular ligament

c. Asymmetry of anterior subtalar facet

d. Narrowing or absence of middle and posterior subtalar facets

e. Halo sign: circular ring of increased trabecular pattern due to altered compressive forces

f. **Anteater sign: C-N coalition in which calcaneus has enlogated process on lateral view**

g. **Putter sign: T-N coalition in which neck of talus unites with broad expansion of navicular**

147. Halo sign on an X-Ray, indicates coalition of?

a. Middle STJ Facet

148. The anterior facet is best seen by which radiographic views?

a. Medial oblique, Ischerwood

149. The middle and posterior facets coalitions are best seen by which radiographic view?
    a. Harris Beath
150. What are treatments for symptomatic tarsal coalitions?
    a. Orthotics or supportive therapy
    b. Immobilizatio
    c. NSAIDs
    d. Badgley – surgical resection of coalition or bar with interposition of muscle belly
    e. Isolated fusion or triple arthrodesis

151. Kid has 25% middle facet with no arthritis. What do you do?

a. Resect the coalition

152. What do you use with cavus foot?

a. Coleman block test

i. This test demonstrates whether the rearfoot deformity is flexible or rigid as well as whether the varus seen in the heel is due to calcaneus or 1st ray

ii. In this test the forefoot, or the medial and lateral portions of the forefoot, are suspended off a block. If the calcaneus returns from a varus to a normal position, the deformity is forefoot driven. A deformity is rearfoot driven only if the varus positioning of the calcaneus remains after all forefoot elements are removed.

1. Bisect the calcaneus for reference of the heel position, evaluate the gait

2. Have the patient stand with the lateral aspect of their foot on a block with the first ray purchasing the ground. The block should be at least 2cm thick

3. The first ray must purchase the ground.

iii. With flexible rearfoot varus the 1st metatarsal will plantarflex and the rearfoot varus will evert to a correct position. This indicates that the varus is caused by 1st ray plantarflexion.

153. McKeever (aka: 1st MPJ arthrodesis/fusion)

a. Originally described as a peg-in-hole 1st MPJ fusion

b. First MPJ only moves in TRANSVERSE and SAGGITAL plane NOT frontal plane.

c. Indications: HAV with dislocation, hallux limitus/rigidus, polio, CP, previous joint surgery.

d. Procedure: remodel the opposing sides to be a matching cone-in-cup shape

e. Hallux position

i. 5-10 dorsiflexed off WB surface

ii. 5-10 Abducted (or parallel to lesser digits)

154. Angle formed b/w bisection of medial cuneiform and 2nd metatarsal shaft; it is another measurement of metatarsus adductus (MA)

a. Engles angle (normal value: 24)

155. Engles angle over 25 indicated what kind of deformity?

a. Metatarsus adductus

i. Adduction of the FF at tarsometatarsal joints; rearfoot is normal

ii. 55% bilateral; males= females

iii. Prominent styloid process; Intoed gait with frequent tripping

iv. The severity decreases from medial to lateral; usually idiopathic; 10% associated with dislocated hip.

v. 86% resolves spontaneously by 3 months.

vi. Etiology

1. Intrauterine position

2. Tight abductor hallucis muscle

3. Absent or hypoplastic medial cuneiform

4. Abnormal insertion of anterior tibial tendon

vii. Measuring the metatarsus adductus angle

1. Reference points

a. Medial-proximal aspect of the 1st metatarsal base

b. Media-distal aspect of the talonavicular articulation

c. Lateral-proximal aspect of the 4th metatarsal

d. Lateral-distal aspect of the calcaneo-cuboid joint

2. MA angle > 20 is considered adducted

3. MA angle at birth is 25-30 degrees

4. MA angle at 1 year ~ 20

5. MA angle by 4 years ~ 15

b. How do you calculate MA?

i. Lesser tarsus angle vs. 2nd met bisection

c. Treatments

i. Conservative

1. Manipulation and serial casting (standard)

2. Shoes, orthotic, splints (Ganley), braces

ii. Surgical soft tissues (2-8 years) [many procedures, but HHS is the one u wanna know ;)]

1. Heyman, Herndon, and Strong

a. Release all soft tissue structures at lisfranc's joint except lateral and plantar lateral ligaments

b. Initially described using one transverse incision, revised to 2 or 3 longitudinal incisions

2. Thompson procedure

a. Resection of the abductor hallucis muscle

b. Release medial head of FHB if necessary

156. 5th Metatarsal Fractures

a. Stewart

i. Type 1 – extra-articular fracture at metaphyseal-diaphyseal junction (true Jones fracture)

1. MOI: Internal rotation of the forefoot while the 5th met remains fixed (excessive Ground Reactive Force with failure of foot to invert)

2. Radiographs: Usually oblique or transverse fracture at metaphyseal-diaphyseal junction

3. Treatment:

a. BK NWB 4-6 weeks for non-displaced fractures

b. ORIF with displacement >5mm

4. Very unstable fracture with high incidence of non-union/delayed union secondary to variable blood supply

5. Remember that diaphysis and metaphysis are generally supplied by two different arterial sources.

ii. Type 2 – Intra-articular avulsion fracture of 5th metatarsal base

1. Intra-articular avulsion fracture

2. MOI: Shearing force caused by internal twisting with contracture of peroneus brevis tendon

3. Radiographic: 1 or 2 fracture lines; intra-articular in nature

4. Treatment:

a. NWB SLC 4-6 weeks with non-displaced fractures

b. ORIF for displacement >5mm

c. Consider excision of fragment and reattachment of the peroneus brevis muscle

iii. Type 3 – extra-articular avulsion fracture of styloid process of 5th metatarsal base

1. "Tennis Fracture"

2. Most common of the 5th metatarsal fracture

3. MOI: contraction of PB with DF of ankle

4. Treatment:

a. If reducible: BK NWB cast for 4-6 weeks

b. If non-reducible: ORIF (possibly tension band wiring)

iv. Type 4 – intra-articular comminuted fracture of the 5th metatarsal base

1. MOI: crush

a. Treatment:

i. BK NWB case for 4-6 weeks

ii. If severely displaced: bone graft and ORIF

v. Type 5 – Extra-articular avulsion of epiphysis in children

1. Seen in children with open growth plates

2. Risk of Iselin AVN

3. AKA: Salter Harris type I

4. Treatment: BK NWB cast 4-6 weeks

b. Torg

i. Type 1– acute Jones fracture

ii. Type 2 – delayed union of a Jones fracture or diaphyseal stress fracture

iii. Type 3 – non-union of a Jones fracture or a diaphyseal stress fracture

157. What else do you have to do with a jones tenususpension?

a. IPJ fusion

158. What isn't helpful when evaluating ischemic patient

a. BNP is usually used for CHF patients

159. Defined as a clinical syndrome caused by the inability of the heart to pump enough blood to maintain fluid and metabolic hemostasis.

a. Congestive heart failure (CHF)

160. What do you see with CHF?

a. Large cardiac shadow on x-ray

161. 68-year-old woman with fainting?

a. Mitral stenosis***

i. The most common etiology is rheumatic fever

ii. Symptoms range from dyspnea, orthopnea, and PND to infective endocarditis and arrhythmias

iii. Diagnosis:

1. PE= Opening snap and mid-diastolic murmur at apex; pulmonary edema
   a. Mitral valve click, midsystolic click
2. Dx= Echocardiography

iv. Treatment:

1. Antiarrhythmias (digoxin, beta blockers) for symptomatic relief
2. Mitral balloon valvotomy and valve replacement are effective for severe cases

opening snap = click

162. What would you see with young athlete who collapses on the field? (think hypertrophic cardiomyopathy)

a. Large ventricles

163. 12 y/o male who plays soccer and is suffering from heel pain. Identify the condition? Most common in boys 10-11 with a cavus foot type who presents with complaints of pain in the heel especially after rigorous activity. Squeezing the medial/lateral epiphyseal margins of the calcaneus exacerbates pain.

a. Calcaneual Apophysitis (Sever's disease)

i. Etiology: excessive traction on the calcaneal apophysis

ii. X-ray findings: multiple centers of ossification, a moth eaten appearance of bone, and apophyseal sclerosis (all which also can be seen in a normal apophysis)

iii. Treatment: Cessation of rigorous physical activity, stretching of posterior muscles, shock absorbing heel pad and orthoses. If severe then a BK cast

164. What would you expect with Achilles tear?

a. Frequently in Weekend warriors men 30-50 years old

b. Location of tear usually occurs in the watershed aread (2-6cm proximal to the Achilles insertion) though avulsions and myotendinous junction ruptures are possible

c. Etiology:

i. Direct blow

ii. Laceration

iii. Abnormal muscle pul

d. CLINICAL EXAM

i. Patient can PF because of posterior tibialis but CANNOT do a one-legged heel raise

ii. Positive Thompson test (squeezing the calf reveals an absence of ankle plantarflesion)

iii. Palpable gap, although this may be less obvious w/ edema after 24 hours

e. Radiographics:

i. Obliteration of Kager's triangle

ii. Increased soft tissue density

iii. Toyger's angle (130-150)

iv. CT scan

v. MRI

f. Treatments:

i. Partial rupture: BK cast 3-4 weeks in plantarflexion followed by another BK cast with less plantarflexion x 4 weeks

ii. Complete rupture (24 hours – 5 days): Full equius BK cast for 3 weeks followed by gravity equinus BK cast x 3 weeks followed by heel lifts

iii. Complete rupture (5 days or longer): Surgical repair, BK NWB cast x 3 weeks followed by heel lifts (19mm to 13mm to 6mm

165. Homeless man who suffered from frostbite, which of the following would be most likely cause of failure of proper treatment.

a. Early cessation of rewarming.

166. Frostbite

a. Implies freezing of the skin. Superficial frostbte is also termed chilblains ad is a mild cold injury

b. Classification of frostbite

i. 1st degree (chilblains) = skin frozen, no blisters

ii. 2nd degree= skin frozen, blisters formed(serous blisters)

iii. 3rd degree=skin frozen and necrotic, ulceration, subcutaneous exposure (skin necrotic + subQ exposure)

iv. 4th degree = skin and subcutaneous tissue frozen and necrotic (skin and subQ necrotic)

c. The treatment of chilblains is re-warming in 105-108 F whirlpool for 30 minutes and administers analgesic (meperidine). Blisters are left intact unless they have ruptured wherein they are treated as burns with cleansing debridement, silvadene and DSD

d. The treatment for more advanced or deep frostbite is rapid rewarming in 108-110 F water administer antibiotics (cefazolin), tetanus prophylaxis, and analgesic (meperidine)

e. It is important to protect the frozen part until proper thaw and care can be administrated and to avoid thaw followed by refreeze.

f. Post-freezing sequella include vasomotor instability and cold hypersensitivity, paresthesia, depigmentation, hyperhidrosis, and atrophy.

167. Most common mistake with frostbite?

a. Debride too quickly

168. The plate over an interfragmentary screw is?

a. Neutralization plate

i. Protects against shear, bending, and torsional forces at the fracture site

ii. Interfragmental compression obtained by lag screws

iii. All holes drilled centrally

169. Fibular fracture which has been reduced and 2 lag screws have been inserted, in addition a plate has been installed on fibula, main function of the plate is

a. Neutralization

170. Non-compressive screw over a bone graft and you put in a fully threaded screw which engages both the proximal and distal aspect of the graft and bone?

a. Buttress plate

i. Maintains alignment of unstable fracture fragments

ii. No interfragmental compression

171. How do you change contrast?

a. Kvp (to increase contrast, you have to decrease Kvp)

i. KVP- penetration, contrast.

ii. Mas-Density or mass.

172. Dorsiflexed position of the 1st metatarsal

a. Met Primus elevatus

i. Defined radiographically as an elevation of the 1st metatarsal with respect to the 2nd metatarsal.

ii. The middle of the sagittal ROM of te

iii. Implied in the development of 1st MPJ OA, sub 2nd metatarsalgia.

iv. Normal range of motion is 10mm

v. Causes:

1. Congenital, pronated foot, iatrogenic (failed base wedge osteotomy)

vi. Symptoms

1. IPK sub 2nd metatarsal head

2. Hallux limitus/rigidus

173. A met Primus Elevatus leads to?

a. Decreases dorsiflexion

b. Hallux limitus

174. A dorsiflexed first ray:

a. Decreased MPJ dorsiflexion

175. When injecting the tarsal tunnel, what don't you have to worry about? (Basically the question asks you to know the contents of the tarsal tunnel)

a. FDB

176. An entrapment or compression neuropathy within the tarsal tunnel beneath the flexor retinaculum (laciniate ligament)

a. Tarsal tunnel syndrome

i. The nerve entrapment occurs either in the porta pedis or laciniate ligament

ii. Borders of the tarsal tunel

1. Flexor retinaculum (laciniate ligament) – medially and posteriorly

a. Extends from the medial malleolus to the medial process of the calcaneal tuberosity and the plantar aponeurosis

2. Calcaneus and posterior aspect of talus – laterally

3. Distal tibia and medial malleolus – anteriorly

iii. Components of the Tarsal tunnel

1. Tibial posterior tendon (most superficial) - TOM
2. Flexor digitorum longus tendon- DICK
3. Posterior tibial nerve and artery
a. 3 branches of the posterior tibial nerve
i. Medial calcaneal nerve
ii. Medial plantar nerve
iii. Lateral plantar nerve
4. Flexor hallucis longus tendon - HARRY

iv. Porta Pedis
1. A canal created by abductor hallucis muscle bell through which the medial and lateral plantar nerves pass.

v. Etiology
1. Trauma: fracture, sprain, dislocation
2. Inflammatory condition: RA, tendonitis, synovitis, diabetes
3. Space occupying lesion (ganglion, varicosities, lipoma, neurilemoma, edema)
4. Biomechanical (excessive pronation)

vi. Signs and symptoms
1. Pins-and- needles, numbness, burning, or shooting pains over the entire plantar foot.
2. **(+) Hoffman-Tinel's sign**= a tingling in region of distribution of the involved nerve with light percussion, results in paresthesias distal to the site of percussion.
3. **(+) Valleix Phenomena**= A nerve trunk tenderness above and below the point of compression, with paresthesias proximal and distal to the point of percussion.
4. **(+)Turk's test** = Application of venous tourniquet to the lower extremity will elicit positive symptoms on the affected side, by producing a venous occlusion vii. Treatment

177. What is non-absorbable and is a physical barrier to bone bleeding?
a. Bone wax

178. How do you check for tibialis anterior strength?
a. Have them dorsiflex and invert

179. Low STJ axis will result in
a. Frontal plane motion (High STJ axis will result in? increased transverse plane motion. This is what happens when you put in a subtalar arthroereisis)

180. Which joint has 50/50 joint motion?
a. Oblique MTJ

181. Which of the following is NOT a common reaction after blood transfusion?
a. Papilledema - is an optic disc swelling that is caused by increased intracranial pressure

182. Common reactions after blood transfusion
a. Non-hemolytic febrile reactions= symptoms onset is 1-6 hours following transfusion
b. Minor allergic reactions= characterized b urticarial
c. Hemolytic transfusion reactions= presents with fever, chills, nausea, flushing, apprehension, back pain, burning pain at the IV site, tachycardia, tachypnea, hypotension.

183. Features of acute osteomyelitis include which of the following?
a. Osteolysis - the degeneration and dissolution of bone caused by disease, infection, or ischemia.
i. Cloaca – an opening along the cortex where pus drains
ii. Sequestrum – dead necrotic bone separated from affected bone
iii. Involucrum – a chronic process where new bone is laid down around dead bone
b. Sequestra, involucrum; cloaca not seen for 10-14 days
c. Osteolysis is ACUTE OSTEO (50% bone destruction before visible on x ray 10 to 14 days)

184. Patient had RA, which of the following drugs you shouldn't discontinue?
a. Prednisone- worried about HPA axis suppression if discontinue it.

185. When must you stop a patient from taking aspirin before surgery?
a. 1 week prior as aspirin stops platelet aggregation

186. When must you stop a patient from taking NSAIDs before surgery?
a. 2 to 3 days discontinue.

187. When must you stop a patient from taking acetaminophen before surgery?
a. Continue using it. Pain medication of choice for patient with renal failure

188. What true about Pseudogout?
a. Associated with acute or chronic inflammatory arthritis
b. Caused by deposition of Calcium pyrophosphate dehydrate (**CPPD)** crystals in the joint.
c. Symptoms are similar to those of gout but it tends to run a longer course (reaches maximum severity at 1-3 days, and resolves in 1 week or longer)
d. The **knee is the most often involved (50%)** followed by the ankle, wrist, and shoulder.

e. Risk increases with age, trauma, patients hospitalized for other medical conditions and those with metabolic disease (hypothyroidism, hyperthyroidism, gout, amyloidosis)
f. Associated with high grade fever
g. Diagnosis: Microscopic examination of joint aspiration reveals (+) bifringient, rhomboid shape crystals.
h. Radiographic: Calcifications of the articular cartilage or meniscus.
i. Treatment: Immobilization, NSAID, analgesics

189. Patient has 4 ankles sprains, and they have a flexible flat foot?
a. Evans with brostom gold.
b. Soft tissue- Kidner: transverse.
c. Young- sagittal: Triple- rigid

190. Patient who has cavus, which reduces coleman block test? (means the hindfoot varus is reducible making it a flexible deformity….if the hindfoot varus was not reducible with Coleman block test, meaning it's a rigid deformity, then a Dwyer Osteotomy would be warranted)
a. DFWO 1 cm from tarsal/metatarsal joint.

191. A patient has an isolated ATFL chronic rupture, what procedure do you do?
a. Lee: for lateral ankle instability; reinforces **ATFL and CFL**
i. Procedure:
1. PB detached proximally
2. Reroute it through lateral malleolus drill hole (post-ant) and sutured upon itself (peroneal anastomosis)
3. Periosteal flap from distal fibular reinforces new ligament
4. Proximal PB attached to PL
b. Christmas and snook: could use PL instead of PB; used for lateral ankle instability to reinforce the **ATFL and CFL**
i. Procedure:
1. Detach half of the PB from its insertion
2. Reroute it through a drill hole in the talar neck and distal lateral malleolus (through the widest part, anterior to posterior)
3. Suture graft tendon to periosteal flap at the level of CFL
4. Distal half of PB then sutured to proximal half
c. Evans: same name as osteotomies indicated for pes planus and clubfoot. Similar to Nilsonne but with an osseous tunnel instead of subperiosteal tunnel: used for lateral ankle instability and to reinforce **ATFL only**
i. Procedure:
1. PB is detached proximally
2. Reroute it through fibular drill hole (anterior- most and distal mots à posterior-proximal location)
3. PB secured posteriorly at proximal aspect of superior peroneal retinaculum
4. Proximal PB is attached to PL
d. Nilsonne: For lateral ankle instability and reinforces **ATFL only**
i. Procedure:
1. PB detached proximally at musculotendon junction
2. Reroute it through subperiosteal groove through fibula (post-superioràant-inferior)
3. PB secured in subperiosteal tunnel (this approximates ATFL course)
4. Prox PB attached to PL
e. Brostom: common procedure used; for lateral ankle instability for primary repair
i. Procedure
1. Incise lateral ankle capsule 2-3cm distal to lateral malleolus
2. Evert foot and tighten capsule including ATFL and CFL in pants over vest fashion with non-absorbable suture
3. Mobilize extensor retinaculum, pull it over capsule and suture down.

192. Child with IM of 20 and hypermobile first ray?
a. Metatarsal-cuneiform metatarsal fusion (Lapidus)

193. What angle describes the relationship between bisection of proximal and distal phalanx?
a. HIA (Hallux Abductus Interphalangeus Angle)
i. Normal 10 degrees)
ii. Distal Akin is the procedure of choice

194. 7 lag screw fails and you want to put 3.5, what do you do?
a. Over drill 3.5 and thread 3.5

195. If epiphysis of the femur is posterior what does the child have?
a. Slipped capital epiphysis.

196. Types of avascular necrosis

a. Renandier =Tibial sesamoid
b. Treve= Fibular sesamoid
c. Theiman = Phalanges
d. Freiberg = Metatarsal heads
e. Iselen = 5th metatarsal base
f. Buschke= cuneiforms
g. Kohler = Navicular
h. Lance = Cuboid
i. Diaz = Talus
j. Sever's = Calcaneus
k. Blount = Proximal, medial tibial epiphysis
l. Osgood-Schlatter = tibial tuberosity
m. Legg-Calve-Perthes= Femoral epiphysis

197. Shoe modification, greater then how many inches do you have to do the modification on the outside of the shoes varus like orthotic?
a. Choices .1/4 inch, 1/8 inch, ¾ inch and 5/8 inch.

198. Patient comes post op 7 days with erythema?
a. Infection

199. Patient comes 1 day postop with red warm foot that doesn't get better when u remove bandages? Choices were hematoma or allergy?
a. Allergy

200. Patient has asthma, what other dermatological reaction are they likely to get?
a. Eczema

201. What are the two soft tissue clinical manifestations caused by Clostridium?
a. Anaerobic cellulitis
b. Gas gangrene

202. Patient discharging foot with crepitus (gas gangrene) what do you do?
a. Emergent I&D
i. Gas gangrene is a surgical emergency because it rapidly progresses to shock and renal failure and is fatal in 30% of cases.

203. Gas causing bacteria: BECK-SP
a. Bacteriodes, Enterococcus, Clostridia, Kleibsiella, Staph/strep, Proteus Mirabilis

204. Clostridium (anaerobic)
a. Perfringes: gas gangrene, liquefaction necrosis, and hemolysis from alpha toxins
b. Difficile: Pseudomen colitis- exotoxin kills enterocytes, need 3 negative toxin screens to clear
c. Botulinum: Food poison; flaccid paralysis- heat-labile toxin inhibits Ach release
d. Tetanus: CNS – exotoxin blocks glycine release from Renshaw cells in the spinal cord- titanic paralysis

205. Podiatric Surgical Emergencies
a. Infection with emphysema (gas gangrene)
b. Open fracture/dislocation
c. Compartment syndrome
d. Necrotizing fasciitis
e. General neurovascular compromised
f. Septic Arthritis

206. What motion tests the tibialis anterior muscle?
a. Dorsiflexion and inversion

207. Ground glass appearance?
a. Fibrous dysplasia (Ossifying fibroma)
i. Benign, geographic, fibro-osseous lesion with ground glass matric
ii. Presents with deformity
iii. Sometimes painful secondary to fracture
iv. usually in tibia

208. Bone looks Smokey lesion?
a. IM infart
i. The most common time for MI post-op is on day 3
ii. Should wait 6 months before considering elective surgery post MI

209. Which is true statement?
a. All metatarsal primary ossification can be seen by birth

210. Which is a violation of patient privacy?
a. Nurse sharing results with homecare assistant

211. What is considered negligence?

a. **Not doing what a reasonable doctor would do**, not doing what an expert would do.

212. Person has exertional angina?

a. Aortic stenosis

i. Harsh systolic ejection murmur; radiation to carotids

ii. Most often seen in the elderly

iii. Unicuspid and bicuspid valves can lead to symptoms in childhood and adolescence

iv. May be asymptomatic for years despite significant stenosis

v. Once symptomatic usually progresses from angina to syncope to CHF to death within five years

vi. PE: Pulsus parvus et tardus (weak delated carotid upstroke) and a single or paradoxically split S2 sound; systolic murmur radiating to the carotids

vii. **Systolic crescendo/decrescendo murmur that radiates to the neck; increase with preload (Valsalva maneuver)**

viii. Dx: echocardiography

ix. Treatment: Valve replacement. Balloon valvulopasty can bridge patients to aortic valve replacement but is not definitive treatment

213. Which would exacerbate CHF?

a. **4 units blood transfusion**

214. Patient takes furosemide and labetalol, which one do they take the day of surgery?

a. **Continue ACEs, ARBS and B blockers.**

b. **Don't continue diuretics you can cause HYPOTENSION or electrolyte imbalance.**

215. Person has retro-fibular pain? MRI is given?

a. **Tenosynovitis**

216. Person with Charcot that's not infected needs to stand for work, what do you give them?

a. **CROW (Charcot Restraint Orthotic Walker) boot**

217. Which of these would not cause bowing?

a. **Lead poisoning (separation of epiphysis)**

218. Which would have least signal intensity on T1?

a. Cortical bone, fat, blood venous, **synovial fluid (fat has the highest signal intensity)**

b. **Cortical bone- CT MRI- for medullary bone.**

219. Which would be best for muscular hematoma?

a. **Ultrasound- (break up the hematoma)**

i. Tendon normally appears hyperechoic to muscle on US

ii. Look for discontinuity of fibers, possible alternating hyperechoid/hypoechoic bands, and an area of intensely hyperechoic hematoma

iii. It is very important that the US is held perpendicular to the long axis of the tendon

220. What is the most common complication of skin grafts?

a. Hematoma/seroma (don't know which one is first hematoma or seroma?***)

221. Is a commonly misdiagnosed condition characterized by severe pain, tenderness, limitation of motion, favoring of one limb, autonomic dysfunction

a. RSD – Reflex Sympathetic Dystrophy

i. Chronic pain syndrome not associated with nerve damage

ii. Etiology: Traumatic, non-traumatic and idiopathic

1. 60% of the causes of RSD are posttraumatic, can be iatrogenic
2. 25% no-traumatic condition such as failure to rehabilitate after stroke, MI, or thrombophlebitis
3. 15% are idiopathic

iii. Clinical picture

1. PAIN OUT OF PROPORTION to the inciting injury or event
2. Reactive hyperemia, muscle weakness, incoordination tremors, muscle spasm, cyanosis, livedo reticularis in the contralateral limb, dystrophic changes in the skin and nails, contractures

iv. Diagnosis:

1. History and physical
2. Thermography: decreased in temperature in either the early or late stages of the disease
3. Bone scans: diffuse increased uptake in the affected area using a 3 phase Technetium bone scan
4. Radiographs: spotty or diffuse osteopenia (Sudeck's atrophy) takes 5-6 weeks to develop
5. Doppler may be helpful in evaluating vasomotor changes
6. Sympathetic block – relief of symptoms

222. What are the different types and causes of CRPS?

a. **Stage 1 – Acute**àDays to weeks

muscle wasting
edema

i. Constant burning pain, allodynia, hyperalgesia, hyperesthesia, hyperpathia **(intense burning)**
ii. Localized edema
iii. Joint stiffness, limitation of motion
iv. Initially the skin is warm, red, and dry, but near the end of this stage it becomes **cyanotic, cold and sweaty (hyperhidrosis)**
v. Bone scans with technetium (99mTC) show increase uptake by the small joints
vi. Radiographs are usually normal, changes takes 5-6 weeks to develop

b. Stage 2 – Dystrophicà3-6 months
i. Continuous burning, aching pain, allodynia, hyperalgesia, hyperpathia
ii. Indurated edema, constant pain by any stimulus.
iii. Skin takes on a cool, pale, discolored, and frequently mottled or cyanotic appearance
iv. Dystrophic changes occur, hair growth is decreased and nails are brittle, cracked, and rigid
v. Radiographs may **show spotty/diffuse osteopenia (Sudeck's atrophy)**
vi. Joints become thickened/contracted and muscle wasting may be present
vii. This stage is still capable of improvement

c. **Stage 3 – Atrophic -** Greater than 6 months
i. Pain, allodynia, and hyperpathia extended proximally to involve the entire extremity, however, the pain may become less severe
ii. More advanced atrophic skin, nail, and soft tissue changes
iii. Skin becomes tightly stretched, smooth, pale, waxy, and cyanotic
iv. Marked muscle atrophy, particularly interossei
v. Contractures and ankylosing joints
vi. Radiographs showed marked spotty or diffuse periarticular demineralization
vii. At this stage prognosis is very poor.

223. Patient has RSD, what do you do?
a. Physical Therapy (early joint mobilization prevention of contractures, and capsular retraction)
i. Massage
ii. ROM exercises
iii. US
iv. Splinting
v. Contrast baths
b. Pain control (narcotics)
c. Sympathetic nerve blockade= Phenoxybenzamine or surgical decompression is a popular treatment modality for RSD
d. Therapeutic blocks can be performed by injection of local anesthetics into the lumbar sympathetic ganglia for LE RSD
e. Medications:
i. Oral corticosteroids: Predinone 60-80mg qid for 2wks and then tapered/discontinued by the 3 4th wk to avoid HPA axis suppression
ii. Tricyclic antidepressants
iii. Beta-blockers
iv. Anti-seizure medications
f. Amputation: is required to control pain, eradicate infection, or improve function, however, the recurrence of RSD in the stump is common

224. Most appropriate treatment for Acute (Stage 1) of CRPS? [Whereas most appropriate treatment for Stage 1? Physical therapy…Notice the difference in treatment protocol adding the word "acute" makes]
a. Early immobilization

225. What is the most common cause of temperature elevation intraoperative?
a. Malignant hyperthermia
i. A side effect of general anesthesia includes: tachycardia, hypertension, acid-base and electrolyte abnormalities, muscle rigidity and hyperthermia.

226. What is the treatment for malignant hyperthermia?
a. Dantrolene 2.5mg/kg IV (one asshole interviewer actually asked me the dosage of Dantrolene!) x 1 then 1mg/kg rapid IV push q6h until symptoms subside or until max dose of 10mg/kg

227. Which gas CANNOT be used in-patient with history of malignant hyperthermia?
a. Halothane and succinylcholine

228. Patient ate 3 hours ago, which anesthesia do you do?
a. Spinal anesthesia because with general they will have aspiration pneumonia.
b. Do spinal anesthesia with RA and asthma.

229. Which anesthesia causes arrhythmia?
a. Succinylcholine or atropine

229. Which anesthesia causes arrhythmia?

a. Succinylcholine or atropine

230. Which type of local is more likely to cause allergy?

a. Lidocaine (amide)

b. Bupivacaine (amide)

c. Procaine (ester)

d. Prilocaine (amide)

i. **Esters have higher allergic potential than amides**

231. What is true about adding epinephrine?

a. It shorts the onset, prolongs duration, decrease toxicity.

232. In which patient is epinephrine contraindicated?

a. Thyrotoxicosis- because it can cause thyroid storm.

b. Pheochromocytoma (Adrenal gland tumor)

233. Which patient is NOT at more risk for cardiac event?

a. DM

b. Cerbovascular event

c. CAD

d. Age over 60.

234. Which is NOT used in the risk stratification for osteoporosis femoral neck fracture?

a. Estrogen level

b. Serum vitamin D levels

c. Dexa scan

d. Age.

235. Obese patient with purple stretch marks with weakness of hip muscles, what are you concerned with doing surgery with this patient?

a. Non healing due to diabetes, hypothyroidism with increased risk of PE

236. Hemoglobin/hematocrit is low 9/27, MCV is high 110, and what do they have?

a. Megaloblastic anemia= A macrocytic anemia

i. Vitamin B12 (cobalamin) and folate deficiency interfere with DNA synthesis, leading to a delay in blood cell maturation.

ii. Cobalamin deficiency is due to malabsorption, usually from pernicious anemia (destruction of parietal cells, which produce the intrinsic factor needed for cobalamin absorption).

iii. Folate deficiency results from insufficient dietary folate, malabsorption, alcoholism, or use of certain drugs.

iv. Drugs that interfere with DNA synthesis including many chemotherapeutic agents

v. History/PE

1. Presents with fatigue, pallor, diarrhea, loss of appetite, headaches, and tingling/numbness of the hands and feet.

2. Cobalamin deficiency affects the nervous system, so patients lacking that vitamin may develop demyelinating disorder an may present with symptoms of motor, sensory, autonomic or neuropsychiatric dysfunction, known as subacute combined degeneration of the cord.

vi. Diagnosis

1. Peripheral smear shows RBCs w/ elevated MCV

2. Bone marrow sample reveals giant neutrophils and hypersegmented mature granulocytes

3. Schilling test (ingestion of radiolabeled cobalamin both with and without added intrinsic) is classic for measuring absorption of cobalamin

interference of DNA

237. What is an increase in reticulocyte count indicative of?

a. Iron deficiency

b. Megaloblastic anemia

c. Recent bleeding

-*(Iron Deficiency and Megaloblastic anemia result in a decrease in reticulocyte count*)

238. What diseases will cause a shift to the left and right?

a. Left: infection, toxemia, hemorrhage, any inflammatory process, increase 0xygen affinity to hemoglobin

b. Right: Megaloblastic anemia and iron deficiency, decrease 0xygen affinity to hemoglobin

239. Patient has positive Babinski, scanning speech, and nystagmus?

a. Multiple Sclerosis

i. Relapsing

ii. Remitting course

iii. Classic Triad (SIN)

1. Scanning speech

2. Intention tremor
3. Nystagmus

iv. MS treatment = ABC
1. Avonex/Rebif
2. Betaseron
3. Copaxone

v. Diagnosis
1. MRI shows multiple, asymmetric, often periventricular white matter lesions especially I the corpus callosum
2. Active lesion enhance with gadolinium

240. Patient is paralyzed on one side and has blindness?
a. Internal Carotid Artery, temporal lobe, parietal lobe.
(blindness indicates the Occipital lobe is fucked up. Occipital lobe is supplied by Internal Carotid Artery)

241. Patient is alcoholic and stubbles in, what do you give them?
a. Thiamine 100mg and 50g of dextrose

242. The anterior facet is best seen by which radiographic views
a. Medial oblique, Ischerwood

243. Identifies posterior/medial facets of STJ
a. Harris and Beath

244. Medial oblique posterior STJ
a. Broden (*Broden view is used to see posterior facet)*

245. Anterior facet
a. Medial oblique

246. X-ray of MO foot, which is true?
a. Foot is flat
b. Film is vertical
c. tube head at 0
d. tube head at 35
(Medial oblique: Foot is plantarflexed, tube head at 0 degrees)

247. Patient transition from white to **blue** to **red**
a. Raynauds Phenomenon
i. Pallor= spasms of digital arteries
ii. Cyanosis= Deoxygenated of blood pools
iii. Rubor= Hyeperemia

248. A woman has gonococci granuloma?
a. Cefrtiaxone
i. DOC for Gonorrhea

249. HIV patient has worsening headache, fever, and stiff neck?
a. Cryptococcus meningitis

250. Normal if age < 2 years, stroke lateral plantar foot proximal to distal then across ball of foot; positive if extension/dorsiflexion of great toe and flex/fanning of lesser toes; response is slow as compared to plantar withdrawal response from tickling.
a. Babinski sign = is the response to striking the sole (extension of the great toe), and when present represents an upper motor neuron lesion of the pyramidal track

251. Which of these would NOT cause positive Babinski sign? *(Positive Babinski sign indicates UMN lesion)*
a. Friedrich's ataxia – UMN
i. Pes cavus and drop foot deformity; more severe than CMT
ii. Degeneration of the post and caudal regions of spinal cord of unknown etiology
iii. Instability and ataxia due to cerebellar involvement
iv. Scoliosis and kyphoscoliosis are common
v. Peroneal nerve weakness will occur followed by ulnar nerve weakness
vi. Glove and stocking distribution of decreased sensation
vii. Trendelenburg gait or lurching due to weakness of gluteus medius
b. Cerebral Palsy – UMN
i. Congenital neuromuscular disease caused by brain lesion
ii. Non-progressive syndrome but muscle imbalances may progress over time
iii. Types
1. Spastic (65%)
2. Athetoid (20%)
3. Other (15%)
c. ALS – UMN

d. CMT- lower motor neurons

i. Inherited familial neuromuscular disease that affects peripheral nerves, causing slowing of sensory and motor nerve conduction

ii. Progressive in nature

252. Flexible flat foot with transverse plane toe many toes sign?

a. Evans

i. Same name as procedures indicated for pes planus and lateral ankle instability

ii. Indication: Clubfoot, Pes valgus foot deformity to lengthen calcaneus

iii. Procedure: Shorten lateral column by calcaneal-cuboid fusion

1. Incision over C-C joint, reflect EDB

2. Osteotomy of calcaneus parallel and 1-1.5 cm (distal 1/3) proximal to C-C joint

3. Wedge of graft inserted into osteotomy (lateral side of graft up to 1cm in kids and max 7mm in adults)

iv. Evans 1953 – Peroneus brevis cut proximally and musculotendinous junction and passed through fibular drill hole from anterior-inferior to posterior-superior. Tendon is sutured to the posterior fibular periosteum.

253. Patient has T-C cartilaginous bar that occupies 25% of the joint with spastic peroneal, what do you do?

a. Resect

-(Any type of tarsal coalition greater then 50% do a fusion and less then 50% resect it)

254. Person has tumor resected, what's not true? 3-4x

a. Incision length must be twice the width

(Incision length must be Four times the width)

255. Which of these is product quality assurance?

a. Collect data and analyze, and improve product and shit

256. What is a rule that people follow when they scrub?

a. Time/brush stroke

257. You increase contrast by increasing?***

a. Kilovoltage (Elder says that increasing kilovoltage decreases contrast*)**

258. Object at 12 inches has 1 rem radiation, at 24 it has?

a. **double the distance falls off to a quarter (0.25 rem)**

259. Which of these are commonly seen with blood transfusion? *(All of the ones shown below are seen with blood transfusion)*

a. Fever, Rash, Pruritus

b. WBC –mediated allergic type reaction or immune reaction to minor group factors

c. Human error causing major lysis, mistyping, and hemolytic transfusion reactions

d. Disease transmission

e. Hep B and C

f. AIDS

260. What position do you fuse first MPJ? *(Both options shown below are correct)*

a. 10 dorsiflexion and 15 abduction or 10 dorsiflexion and 10 abduction

261. STJ does not supinate on gait but supinates when you examine foot, what is the problem?

a. Windlass mechanism failure, plantar flexed first ray, **tibialis anterior weakness**

262. What is the Hubscher Maneuver?

a. DF the hallux in WB, the arch will rise due to windlass mechanism if no osseous restrictions are present

263. Which type of patient CANNOT you used accommodative orthotic?

a. Drop foot

264. Accommodative Orthotics

a. Plantar pressure redistribution – painful plantar lesions

b. Arch support – increase shock absorption

c. Flexible materials used

d. NWB or Semi-WB cast

e. Neuropathy, STJ hypermobility, postural instability

265. Functional Orthotics

a. FF/RF deformities

b. STJ motion

c. Locks MTJ

d. RF posted

e. Rigid/semi-rigid materials used

f. From NWB neutral cast

266. Firm material utilized to build up directly plantar to the hallux (bring the ground up to the toe). The extension is not connected directly to the orthotic plate

a. Morton's extension

267. What Morton's extension for?

a. Dorsliflex hallux, treats hallux elevatus, and structural hallus limitus

-(Functional hallux limitus can be treated with reverse Morton's extension)

Functnl = Rev.
S. = Normal

268. Elevated first ray causes?

a. Decreased hallux dorsiflexion

269. Person comes in 3 days postop with red swollen foot, what do they probably not have?

a. Vasculitis (you would have allergies, infection)

i. Inflammation of blood vessels

ii. What are the most common manifestations of cutaneous involvement in systemic vasculitis?

1. Cutaneous clinical manifestations include palpable purpura, ulcerations, livedo reticularis, and digital tip infarcts

270. Which of the following is NOT true about melanoma?

a. Tumor depth doesn't deal with prognosis.

271. What is true about melanoma?

a. Malignant tumor of the melanocytes arising from pre-existing nevi or de novo.

b. Found primarily on sun exposed areas of fair skinned individuals

i. Predilection for the backs of men and the legs of women. When it occur in blacks, it is often found on the palms, soles, or nail beds

c. Types of melanoma

i. Superficial spreading – MOST COMMON (70%)

ii. Nodular melanoma – 15% WORST PROGNOSIS

iii. Lentigo Maligna Melanoma (malignant freckle-MOST BENIGN)) – 5% SLOWEST GROWING

iv. Acral Lentiginous melanoma (typically found on the palms, soles and nail beds) – 10% aggressive; invades early. This is where you see Hutchinson's sign!

d. Signs and Symptoms

i. ABCDE's

1. Asymmetrical
2. Borders – irregular, notched
3. Color – multi-colored (pink, white, purple, gray, tan, black, blue or brown)
4. Diameter – greater than 6mm in diameter
5. Elevation – lesions are usually elevated

e. Breslow and Clark are both depth.

f. Clark's Classification (Depth of invasion in layers)

i. Stage I – limited to the epidermis (no basement membrane involved)

ii. Stage II- through the basement membrane into the papillary dermis

iii. Stage III- Filling the papillary dermis

iv. Stage IV- Into the reticular dermis

v. Stage V- Into the subcutaneous fat

g. Breslow's Classification (thickness of tumor - depth in mm)

i. < 0.75 =97% survival rate at 10 years

ii. 0.76 – 1.50 = 87%survival rate

iii. 1.51-3.99= 67% survival rate

iv. >4.00 = 40% survival rate

272. When the STJ supinates in CKC, what does the talus do?

a. **Dorsiflex and abduct** *(in STJ pronation, the talus plantarflexes and adducts)*

273. **Cyma line made up of, pick 2?**

a. **TN and CC**

b. A smooth S configuration formed by the talonavicular and calcaneocuboid joints seen on the lateral x-ray.

i. In the ideal foot the cyma line is intact

ii. With a pronated foot the cyma line is anteriorly displaced meaning that the TN joint is anterior to the CC joint and does not follow the nice S shape

iii. With a supinated foot the TN joint is posteriorly displaced

274. The most common form of arthritis and occurs as a result of wear and tear on the joints. The cartilage that cushions the impact on the joint gradually deteriorates.

a. Osteoarthritis

i. A the cartilage wears down, subchondral bone is exposed which becomes sclerotic, the surface becomes worn and polished in a process called

1. Eburnation

275. **Which is seen in OA?**
    a. **Osteophytes (radiographic hallmark)**
    b. **Asymmetrical non-inflammatory arthritis**
    c. **Pain worse at end of day (after use)**
    d. **Loss of flexibility**
    e. **Heberden's nodes** à **bony protuberances at the margins and dorsal surface of the DIPJs**
    f. **Bouchard's nodes** à **bony protuberances at the margins and dorsal surface of the PIPJs**
    g. **Joints most commonly affected – neck, back, knees, hips, shoulder, 1st MPJ and 1st radiocarpal jt.**
    h. **(-) RA factor**

276. All of the following features are seen in Osteoarthritis except:
    a. Uneven joint space narrowing
    b. Heberdan Nodes
    c. Bouchard Nodes
    d. **Pannus Formation** *(only seen in Rheumatoid Arthritis)*

277. **What is seen in RA?**
    a. **Symmetrical destruction of CC joint**
    b. **Inflammatory, symmetrical**
    c. **Pain worse in morning or after rest**
    d. **Osteopenia**
    e. **Increase soft tissue density**
    f. **(+) RA factor**
    g. medial erosions
    h. fibular/ulnar deviation of digits
    i. Pannus formation

278. **All of the following are considered seronegative spondyloarthropathies EXCEPT:**
    a. Psoriatic arthritis
    b. Ankylosing spondylitis
    c. Reiter's syndrome
    d. **Erythromelalgia**
        i. **Is a neuropathic pain syndrome, not a seronegative spondyloarthropathy**
    e. **Rheumatoid arthritis**
        i. **A seropositive spondyloarthropathy**

279. **What conditions are associated with positive HLA-B27?**
    a. Psoriatic Arthritis
    b. Enteropathic arthropaties (an umbrella term that includes IBD and Crohn's)
    c. Ankylosing spondylitis
    d. Reiter's disease

280. **What do the lawyer defendant contract entail?**
    a. Lawyer cant be forced to tell the court everything the defendant told him

281. What does OSHA require?
    a. The OSHA guidelines should be posted visibly for all employees to see.

282. What is the most common, benign, primary bone tumor?
    a. Osteochondroma

283. X-ray of hallux showing projections what is the differential diagnosis?
    a. **Osteochondroma**
        i. Most common benign primary bone tumor
        ii. Cartilage-capped, hyperplastic exostosis of bone pointing away from the joint.
        iii. Common in the general population, usually discovered in adolescence as painless, hard "lump"
        iv. Suspect malignant transformation with growth after skeletal maturity, pain or cap >2 cm.
        v. The most frequent form in the foot is the **subungual (Dupuytren's) exostosis**
        vi. While the classic type has a hyaline cartilage cap, the subungual types have fibrocartilage caps
        vii. Excision is curative if the overlying soft tissue which acts as a perichondrium is removed

284. Which of the following is a typical radiographic finding in cases of osteochondroma?
    a. Osseous protuberance with the cortex continuous with the parent bone.

285. A 31-year-old female presents with a complaint of pain of the dorsal distal aspect of the hallux. Radiographs reveals radiolucent area at the distal phalanx with surrounding sclerosis. There is no sign of infection, no sinus tract, no edema. What is the clinical diagnosis?
    a. Enchondroma
        i. Benign, well defined, intramedullary, cartilaginous lesion
        ii. Geographic lesions with punctate calcified matrix
        iii. 3rd and 4th decades

iv. Painless swelling unless pathologic fracture

286. A 50-year-old patient presents with a tender mass on the lateral forefoot. A radiograph reveals an expansile "soap bubble" lesion in the 5th metatarsal. The most likely diagnosis is

a. Giant cell tumors

i. Benign lesions; usually solitary and locally aggressive
ii. Radiolucent center and denser periphery
iii. Eccentric and expansile, with a border that is well defined but not sclerotic, and have a "soap bubble" appearance.

287. ALP and hydroxyproline in the urine is indicative of what kind of disease?

a. Metabolic bone disease

288. Hypercholesterolemia treatment that leads to flushing and pruritis. Decrease fatty acid release from adipose tissue; decrease hepatic synthesis of LDL

a. Niacin

i. Increase HDL; Decrease LD
ii. Side effects:

1. Skin flushing (can be prevented with ASA)
2. Paresthesias
3. Pruritis
4. GI upset
5. Increase LFT's

289. What are the signs and symptoms of Vitamin B3 (niacin) deficiency?

a. Pellagra

i. Diarrhea
ii. Dermatitis
iii. Dementia

290. What is least indicative of chronic valve disease of the heart?

a. Cardiac enzymes, chest xray *(cardiac enzymes are only good to indicate acute disease)*

291. Which is least indicative of ischemic heart disease?

a. Chest xray, **BNP**

292. Which is increased in a cavus foot?

a. TN articulation *(decreased in planus foot type)*

293. Ankle ligaments

a. Lateral: ATFL, CFL (extra-capsular), PTFL
b. Medial: Superficial and deep deltoid

i. Superficial talotibial, naviculotibial, tibiocalcaneal
ii. Anterior talotibial and deep posterior ligaments

c. Syndesmotic ligaments

i. AITFL – anterior inferior tibiofibular ligament (Bassett ligament)
ii. PITFL – posterior inferior tibiofibular ligament
iii. Interosseous tibifibular ligament

294. What is the strongest lateral ankle ligament?

a. Posterior talofibular

295. Patient has lateral ankle sprain with the foot dorsiflexed, which ligament is commonly injured?

a. ATF

296. What angle do the ATFL and CFL create?

a. 105 degrees

297. Patient has pain at anterior process after plantarflexion abduction injury?

a. Bifurcate ligament (dorsal calcaneonavicular and calcaneocuboid ligaments)

i. Y shaped with the stem attached to the calcaneus and one arm attached to the cuboid and the other arm to the navicular

298. Which ligament prevents over inversion?

a. **Cervical (ANTERIOR TALO CALCANEAL)**

i. Found laterally in the sinus tarsi and resists supination(abduction and inversion) of the STJ

299. **Which ligament prevents over eversion?**

a. **Interosseous ligament**

300. **How do you calculate tibial varum?**

a. Relationship of **posterior 1/3 leg to rearfoot** with the foot in NCSP
b. NCSP= STJ plus tibial component.

301. Patient feels postop numbness from the medial arch to the first MPJ, what nerve damaged?

a. **Saphenous**

302. **When would you do a block to block the longest branch of the femoral nerve?**

a. **Medial arch**, lateral ankle, dorsal lalteral foot

303. Local "ring" block of the 1st MPJ

a. Mayo Block

i. Medial dorsal cutaneous nerve

ii. Deep peroneal nerve

iii. Saphenous nerve

iv. Medial plantar nerve

304. Mayo block 3rd digit?

a. **Intermediate dorsal cutaneous nerve**

b. **Medial dorsal cutaneous**

c. **Medial plantar**

d. Lateral Plantar

(Be careful if the question asks whether to block the 3rd digit or the 3rd interspace; they're assholes and will try to confuse you like dat!)

305. You are doing flat foot surgery with gastroc recession, what level do you place tourniquet?

a. **Thigh** Tourniquet needs to be in thigh 200mm hg above systolic

306. About to do a PNA, inject local, patient gets sweaty and can't breathe?

a. Allergic rxn so place tourniquet around calf to stop it from spreading

307. Patient has Achilles rupture and need MRI, pick 3 contraindication?

a. Pacemaker, foreign metal body, cochlear implant

308. Person has infection, you give them antibiotics, come back a few days later and it even worse, what do you do?

a. **Admit to hospital for I&D**

309. **Pick two that will cause neuropathy?**

a. **Sarcoidosis, aids, uremia**

b. **DANG THE RAPIST**

310. Pick two, which are in the 2nd muscle layer *(But seriously, if you don't already know the answer to this question you need to quit Podiatry school meow)***?**

a. QP and lumbricals

311. Patient got calf pain, what do you order?

a. Doppler ultrasound

312. Patient has thickened fat pad, what else would you see?

a. Coarse facial features *(thickened fat pad is classic phenotype of agromegaly and so are coarse facial features)*

313. Someone with decreased bone density, you would see?

a. Osteopenia= is a generalized term to denote a relative loss in bone density regardless of any etiology

i. Hyperparathyroidism, which can affect bone in many ways, appears on radiographs as osteopenia. Excess parathyroid hormone results in an increase in bone metabolism, which may appear as microfractures, bone cysts, brown tumors, and pathologic fractures.

b. Osteoporosis= Loss of trabeculae and thinning of the cortex.

i. Bone loss that is mostly cortical (80%) but 33-50% of bone must be lost before the disease is evident.

314. Generalized osteopenia is a characteristic feature of

a. Osteoporosis

315. Person with deep peroneal damage has what kind of gait?

a. Steppage gait

i. Gait exhibits a swing phase drop foot. Seen with **Charcot-Marie-Tooth**, polio Guillain-Barre syndrome, CVA, paralytic drop foot, and fascioscapulohumeral dystrophy.

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316. Which of the following gait pattern is most commonly associated with LMN pathology?

a. Steppage gait

i. LMN lesion cause weakening of muscles and paralysis which leads to a steppage gait

317. A patient that has intra-articular talar fracture with complete displacement, what is the treatment?

a. Arthrodesis

318. Tarsal tunnel injection, what don't you have to watch out for?

a. FDB

319. Tarsal Tunnel Components

a. Tibialis Posterior
b. Flexor digitorum Longus
c. Posterior tibial nerve and artery
d. Flexor Hallucis Longus

320. Tarsal Tunnel Borders

a. Flexor retinaculum (Laciniate ligament) – Medially and Posteriorly
b. Calcaneus and Posterior aspect of Talus – Laterally
c. Distal tibia and medial malleolus – Anteriorly

321. Excessive pronation, space occupying lesions, tenosynovitis, ganglions, edema and fracture of the ankle, talus or calcaneus, may result in?

a. Tarsal Tunnel Syndrome

i. Burning pain, numbness of the plantar foot and referred pain proximally indicates tarsal tunnel syndrome

322. Dorsal beaking at the talo-navicular joints may result in

a. Anterior tarsal tunnel syndrome

323. Another name for shin splints

a. Medial Tibial Stress Syndrome

324. What is involved in the lateral release?

a. Release of **adductor hallucis tendon** from base of proximal phalanx and fibular sesamoid.**)**
b. Release of **fibular metatarsal-fibular sesamoid ligament** and **lateral capsule**
c. Tenotomy of the lateral head of the FHB between the fibular sesamoid and the proximal phalanx **- Deep Transverse intermetatarsal ligament**
d. Optional excision of the fibular sesamoid

325. What instrument is good to raise plantar plate?

a. McGlamry Elevator

326. What is NOT an acute change seen in Achilles rupture?

a. Flexion of toes

i. Frequently in "Weekend Warriors" men 30-50 years old
ii. Location of the tear usually occurs in the "watershed area" (2-6cm proximal to the Achilles insertion) though avulsions and myotendinous junction rupture are also possible
iii. Patient can plantarflex because of the posterior tibialis but cannot do a one-legged heel rise.
iv. Positive Thompson test (squeezing the calf reveals an absence of ankle plantarflexion).
v. Palpable gap, although this may be less obvious with edema after 24 hours

327. Patient has very itchy lesions around the mouth, some kind of dermatitis, txt?

a. Corticosteroids

328. Which isn't for pain?

a. Metachlorpromide (Reglan) *(for GERD)*

329. What is associated with gas gangrene?

a. Myonecrosis, anaerobes, streptococci, clostridium species.

330. What are two soft tissues clinical manifestations caused by Clostridium?

a. Anaerobic cellulitis and gas gangrene

331. Why is gas gangrene a surgical emergency?

a. It rapidly progresses to shock and renal failure and is fatal in 30% of cases.

332. Which are listed in the OSHA blood Bourne pathogens, which are classified as other potentially bad fluids?

a. NOT Feces
b. Synovial fluid, parts of an organ, any fluid containing blood.

333. OHSA (Occupational Safety and Health Act) regulations require that an employer do which of the following?

a. Post OSHA regulations in a highly visible area for all employees.
b. OSHA – general responsible to protect employees against both safety and health hazards

334. In addition to gloves, OSHA designed personal protective equipment includes

a. Gowns and eye protection.

335. This is a research body which develops recommendations occupational and safety stands to OSHA

a. NIOSH (national institute for occupational safety and health

336. Carditis, acute polyarthritis, chorea, erythema marginatum and subcutaneous nodules are characteristic of what illness?

a. Acute rheumatic fever

337. What is the most common etiology of acute rheumatic fever?

a. A preceding beta hemolytic streptococcal pharyngitis.

338. Child has some weird heart murmur, what do you suspect is the cause of it?

a. Infection-Rheumatic fever

b. Anti-streptolysin O titers (ASO titer) aid in the diagnosis of rheumatic fever

339. How does acute rheumatic fever affect the heart? What is the mechanism?

a. Sensitivity reaction to the hemolytic streptococcus, which produces its damage without actually being present in the heart. During the acute phasethere is pancarditis, myocarditis (Aschoff bodies) and endocarditis. Usuall pancarditis ad myocarditis resolve but chronic endocarditis with scarring of the valves occurs.

340. Name 3 things that will cause enlarged muscles with myositis?

a. Fat deposit, sarcoid granuloma, muscular hypertrophy, **bacterial infection.**

341. What is the best view to see isolated avulsion off the hallux?

a. Lateral oblique

342. What is the best view to see calcaneal cyst?

a. Calcaneal axial view

b. L**ateral view**

343. Name 3 isotopes used in bone scan?

a. Indium 111 Oxime – **WBCs isolated f**rom blood sample, labeled, and re-injected

i. Scan at 24 hours; half life is 67 hours

ii. Predominantly uptake by neutrophils

iii. Highly sensitive and specific for acute soft tissue and osseous infection

b. Gallium-67 citrate – uptake by siderophore complex (direct bacteria) and lactoferrin (protein released by bacteria)

i. Scan taken 48-72 hours after injection or done in triphasic manner

ii. 42% specificity; 80% sensitivity per Termaat

iii. Acute inflammation and infection

c. Technetium 99m HMPAO – WBCs isolated from blood samples, tagged ad re-injected

i. Scan at 3 hours

ii. Tagged molecule is HMPAO (hexamethylpropyleneamine oxime)

344. Athlete has non-healing jones fracture, what do you do?

a. IM screw

345. Agent used to stop bone bleeding?

a. Bone wax

346. Name 3 with renal dosing?

a. Vancomycin= ototoxicity and nephrotoxicity (reversible)

b. Gentamycin= ototoxicity (irreversible) and nephrotoxicity

c. Zosyn= Piperacillin/Tazobactam

347. Patient has x-ray tike and you see serpiginious Smokey, lesion?

a. IM Infarct

348. Which is NOT a sign of aggressive tumor?

a. Codman triangle *(sign of osteosarcoma)*

b. Moth eaten

c. Wide transition zone

d. Geographic

349. Name 3 treatment modalities for reducing inflammation in ankle sprain?

a. Cryotherapy, compression, bracing

350. What is the threshold for diagnosing compartment syndrome?

a. 30mmHg

i. Normal compartmental pressure 0-5mmHg

351. What procedures are for flat foot, name 3? Page 486 pocket podiatry

a. Evans, arthroresis, TAL

b. Others:

i. Evans – transverse plane

ii. Kidner – transverse plane

iii. Lowman – sagittal plane

iv. Cotton - sagittal plane

v. Hoke - sagittal plane

vi. Miller - sagittal plane

vii. Young - sagittal plane

viii. Chambers – frontal plane

ix. Baker - frontal plane
x. Selakovich - frontal plane
xi. Arthroeresis
xii. Calcaneal osteotomies
1. **Gleich**
2. **Silver**
3. **Koutsogiannis**
4. **Triple arthrodesis**

352. A doctor educating some1 on preventing something is what type of intervention?
a. Primary
b. Secondary: treating the disease before symptoms manifest.
c. Tertiary: treating the symptoms.

353. Which is not true?
a. Glycemic control isn't important in decreasing risk of CAD

354. On x-ray, increased density is also called?
a. Scelorosis (bone is not being mineralized)

355. Which is normal in an 8-year-old child?
a. 45 degrees internal and external rotation of Hip

356. Which is NOT used in the treatment of osteoporosis?
a. Estrogen, vitamin D, bisphosphonates, **corticosteroids**

357. STJ with low axis has increased motion in what plane?
a. Frontal
b. High axis- transverse

358. Which joint has equal motion in 2 planes?
a. STJ

359. Avulsion of the plantar, 1st met base is caused by muscle?
a. Peroneus longus

360. Patient has low cortisol but high ACTH, what disease? *(Receptor is not responding to trophic hormone)*
a. Addison's disease
i. Autoimmune primary chronic adrenocortical deficiency leading to decreased production and secretion of the adrenal hormones (hypocortisol) secondary to deficiency in ACTH à hyperkalemia and hyponatremia
ii. Glucose decrease in Addison's disease
iii. Yellow nail may suggest Addison's disease or DM
iv. May cause an increase in the hematocrit value

361. A patient presents with weakness, nausea, vomiting, weight loss and new skin pigmentation. Labs show hyponatremia and hyperkalemia. Treatment?
a. 1o adrenal insufficiency (Addison's disease)
b. Treat with replacement glucocorticoids, mineralcorticoids, and IV fluids

362. Patient presents with wrinkly shirt, lost 15 pounds, don't really want to talk?
a. Depression

363. How do you plantarflex an osteotomy using the axis guide?
a. Drill tilted perpendicular to ground reactive forces.
b. Dorsal medial to plantar lateral.
c. Dorsiflexion is LATERAL DORSAL (lateral distal- lengthen it / Lateral proximal- shorten it)

364. Which type of insurance requires you to get a referral before you see a specialist?
a. HMO

365. Which of these diagnostic tests will not change in chronic ischemic heart disease?
a. BNP- Brain natriuretic peptide *(BNP is good for CHF, don't get confused by the question)*
i. Is a 32 amino acid polypeptide secreted by the ventricles of the heart in response to excessive stretching of heart muscle cells.
ii. The release of BNP is modulated by calcium ions.

366. Which blood type is the universal acceptor?
a. AB

367. What surgery is done adjunct with a jones tenosuspension?
a. Hallux IPJ fusion

368. Which component of stainless steel causes the most allergies?
a. Nickel *(so use TITANIUM)*

369. Club foot: Simon's rule of 15: **Talus first met and the Kites- Talo calcaneus *(****If kites (talo calcaneal) is under 15, and meary's (talo-1st met) is over 15)***

370. Locate the sustentaculum tali in sagittal MRI image

371. Where does the artery in the sinus tarsi originate?
- **a. Anterior Tibial Artery or Dorsalis Pedis Artery** *(artery of sinus canalis is from perforating peronal artery)*

372. If you are going to give a popliteal block which are the parameters
- **a. Needle goes 7 cm above popliteal crease and 1 cm lateral to apex of popliteal triangle**

373. Doing a Plantar fasciotomy what is the nerve that passes between quadratus plantae and FHB?
- **a. Lateral plantar nerve**

374. What layers of the foot do the plantar nerves run?
- **a. Medial plantar nerve – in the 1st layer (between FDB and abductor hallucis)**
- **b. Lateral plantar nerve – between the 1st and 2nd layer**

375. A person that is unable to dorsiflex foot has problems with which nerves
- **a. Deep peroneal nerve**

376. In a neuroma surgery if the patient has toe flexed which muscle was cut?
- **a. EDL/EDB**

377. Picture of KOH stain is read
- **a. KOH tests grows fungus**

378. Which is the anesthetic most commonly used in monitored anesthesia care (MAC)?
- **a. Propofol (Diprivan)**
  - **i.** 1% emulsion IV only – total IV anesthesia IV sedative/hypnotic agent for the induction and maintenance of anesthesia; induction of sleep in 40 seconds.
  - **ii.** Cleared by liver at a much faster rate, time from emergence to full recovery following induction dose is more rapid than any other IV anesthetic agent.
  - **iii.** Induction dose 1.5-2.5mg/kg
  - **iv.** Onset: 15-45 seconds
  - **v.** Duration: 5-10 minutes

379. Percocet
- a. Schedule II – high potential for abuse; requires narcotic script
- b. Oxycodone/acetaminophen

380. What is the difference between Percocet and Percodan?
- a. Percocet has 325mg of acetaminophen while Percodan has 325mg of ASA

381. Which of the following are the side effects of Percocet
- **a. Dependency**
- **b. Respiratory depression**
- **c. Apnea**
- **d. Circulatory depression**
- **e. Hypotension**
- **f. Shock, anemia, hemolytic**
- **g. Hepatotoxicity**

382. Common reactions with Percocet
- **a. Lightheadedness**
- **b. Dizziness**
- **c. Sedation**
- **d. Nausea/vomiting**
- **e. Constipation**
- **f. Rash**
- **g. Pruritis**

383. Which antibiotic is used for MRSA?
- **a. PO:**
  - **i. Linezolid (Zyvox), Minocycline, cipro/rifampin, Bactrim/rifampin**
- **b. IV:**
  - **i. Vancomycin (DOC), Zyvox, minocycline, Daptomycin (cubicin), clindamycin**
- **c. Topical: Bactroban**

384. MRSA Drugs
- **a. Bactrim/rifampin**
- **b. Cubicin (daptomycin)**
- **c. Clindamycin**
- **d. Synercid**
- **e. Vancomycin (DOC)**
- **f. Zyvox (Linezolid)**

385. According to OSHA guidelines which requires isolation
- **a. TB, MRSA**

386. If a person is allergic to penicillin what do you give?

a. Clindamycin, Vancomycin, Levaquin, Bactrim

387. Which is organism responsible for puncture wound osteomyelitis?

a. Pseudomonas

388. Which is the most common type of fungal infection?

a. Trichophyton. Mentagrophyte *(most common cause of onychomycosis is T. Rubrum; don't get confused by the question)*

389. Produce a state where the patient becomes mentally dissociated from the environment

a. Ketamine => amnesic properties, hallucinations

i. IV Anesthesia often used in pediatrics

ii. 1-2mg/kg BW IV over 1 minute; may repeat initial dose decrease dose by . to 1/3.

iii. 10-15 minutes of sleep and anesthesia with 40 minutes of analgesia per single dose

iv. Increase BP, intraocular pressure, and cardiac output. Problems: unpleasant dreams and hallucinations.

390. Strong narcotic (analgesic equivalent to 10mg morphine or 75mg Demerol).

a. Fentanyl => narcotic analgesic; strong opioid

391. IM or IV 2-3 times more potent than diazepam (Valium). Pre of sedation or the induction of IV anesthesia; impairs memory of perioperative events may be used alone or with N20 and O2

a. Midazolam HCL (Versed-Roche) => amnesic properties

i. Contraindications: allergy to the benzodiazepines; narrow angle glaucoma

ii. Warnings: Cause respiratory depression, monitor patient closely

392. Which are the consequences of chronic use of nitric oxide?

a. Vit. B12 deficiency (blood, neuropathy), encephalopathy, affects pregnancy.

393. Case of labs with elevated liver enzymes and platelets

a. HELLP => trouble when pregnant ***(****HELLP syndrome is a group of symptoms that can develop in pregnant women=* ***H****emolysis,* ***EL****: elevated liver enzymes,* ***LP****: A low platelet count)*

394. Which liver enzymes are elevated in alcoholics?

a. AST, ALT, GGT

395. The alcoholic patient

a. Should have 3-4 days of rehydration, vitamin, proper diet, and no alcohol intake prior to coming to surgery

b. Nutritional status should be evaluated: this is done via measurement of serum albumin and total lymphocytes.

i. **Serum albumin (<2.3 gm/dl):** a measurement of nutritional status for the previous week. Not a good indicator of nutritional status for the day of surgery.

ii. **Total lymphocytes (<900):** a good indicator of nutritional status for the day of surgery. This measures the response to stress.

iii. normal albumin3.5-5.5; normal lymphocytes 1000 – 4800

396. Classification of neuropathies (DANG THERAPIST)

397. A patient convulses in your office. What do you do?

a. Airway clearance

398. What is the antidote for malignant hyperthermia?

a. Dantrolene

399. What are the little black spots you see in a verruca?

a. Petechiae

400. When you suspect DVT which noninvasive study do you do?

a. Doppler US

401. Which type of gait has a patient with CMT disease?

a. Steppage gait

402. A young patient with neurological testing positive for hypereflexia, etc. Which test would you do?

a. Nerve biopsy

403. Most common sign of CHF

a. Dyspnea

b. Pitting edema

c. Orthopnea

d. Paroxysmal nocturnal dyspnea

e. Chronic cough

f. Fatigue

g. Cheyne-stokes respirations

404. Ultrasound detecting a neuroma

a. Hypoechoic

405. A centrally mediated chronic pain disorder characterized by soft tissue and axial skeletal pain in the absence of joint pain. Inflammation is notably absent. Most common in women 30-50 years of age. Associated with depression, anxiety, sleep disorders, IBS, and cognitive disorders.

a. Fibromyalgia

406. Frontal plane: angle of femoral inclination

Normal: Infants (135-155 degrees) & adults (120-135 degrees)

Abnormality: **Coxa valga >130 at adulthood= bow legs with compensatory genu varum**
Coxa varum <120 at adulthood= knock knees with compensatory genu valgum

Slipped femoral epiphysis: Common during childbirth, M>F (10-16yrs) where the femoral epiphysis slips inferior and posterior; Treatment: Surgical

407. Adduction of the forefoot at tarso-metatarsal joints, prominent styloid process, intoed gait with frequent tripping. The severity of the adduction progressively decreases from medial to lateral; usually idiopathic

a. Metatarsus Adductus

i. Angles:

1. MA > 20 is considered adductus
2. Normal at birth: 25-30 degrees
3. At 1 year: ~20
4. At 4 years: ~15

ii. Causes:

1. Intrauterine position
2. Tight abductor hallucis muscle
3. Absent o hypoplastic medial cuneiform
4. Abnormal insertion of anterior tibial tendon

iii. Classifications:

1. Dynamic: a baby is born with straight feet for the 1st 7-8 months, then baby develops a "C" shaped foot due to tightening or contracture of the abductor hallucis tendon. Hallux is pulled into adduction with WB. **Treatment involves cutting or lengthening the abductor muscle.**
2. Flexible: straightens out or over corrects when force is applied to the medial aspect of the foot. Treatment is with **straight last shoe.**
3. Rigid: little change in the FF to RF position with medial pressure. Biggest problem is shoe fit (prominent styloid process). **Treatment is serial casting or surgical**

iv. **Crawford and Gabriel Classification** = Stroking the lateral border of the foot will cause peroneal muscle contractions which will demonstrate the degree of active forefoot mobility

1. Type 1 – flexible (forefoot will correct past neutral into slightly overcorrected).
2. Type 2 – Partial flexibility (does not correct to neutral actively but does passively).
3. Type 3 – Rigid (does not correct to neutral actively or passively).

v. Bleck Classification àbisect the heel and extend the line distally to see where it falls on the toes

1. Normal: between 2nd and 3rd toe
2. Mild: through 3rd toe
3. Moderate: between 3rd and 4th toe
4. Severe: between 4th and 5th toe

408. Begins at forefoot loading of the same limb/toe off of the opposite limb. Ends at heel off of the same limb or stance phase limb. Makes up 40% of the stance phase of gait.

a. Midstance

409. What controls penetration in x-ray?

a. Increasing the Kilovoltage increases the penetrating power of the x-ray emitted from the x-ray tube, with more photons reaching the x-ray film through the target tissue. This increases the exposure of the film and thus increases radiograph density. **To keep the radiograph density constant, it is, therefore, necessary to reduce the mAs, which controls the total number of x-rays produced at the x-ray tube**

410. Measures this reflected beam and the signal is transformed to be displayed as a recorded waveform looking more like a narrow teepee.

a. Photoelectric detector= energy is absorbed

411. Which cells are most sensitive?

a. Lymphocyte & blood forming cells
b. Sperm & GI cells => Neuromuscular cells

412. The middle and posterior facet are best seen by which radiographic view. This view evaluate tarsal coalitions

a. Harris Beath

i. Useful in examining the STJ (T-C coalitions of the posterior and middle facets), calcaneal fractures, and sustentaculum tali.
ii. 3 exposures taken with x-ray tube set at 35, next 40 then 45 degrees

iii. Normally the posterior and middle facets should be present and parallel to each other. With a subtalar coalition the facets are no longer parallel

413. What coalitions does the Harris-Beath view (axial view of the calcaneus) best demonstrate?

a. Talocalcaneal coalition

414. Specialized Plain Film Studies

a. Harris and Beath= identifies posterior/middle facets of the STJ

b. Isherwood= oblique lateral-anterior facet STJ

c. Broden= Medial oblique posterior STJ

d. Lateral oblique= Anterior process of the calcaneus to check for CC joint involvement

e. Lateral foot: see joint depression; evaluate Bohler's and Gissane's angle; check for loss of height of the posterior STJ.

f. AP foot: to evaluate all other foot bones for additional fractures/pathology

415. A patient with positive gallium and Tech 99, what is the diagnosis?

a. Acute osteomyelitis

416. Rapidly growing benign bone forming tumor that can become malignant. Occurs in the 2nd and 3rd decade of life, M>F. Most commonly see in the spine, skull, and the diaphysis of long bones. Mild pain worse at night and not relieved by ASA. Wellcircumscribed, expansile, osteolytic lesion >1cm with areas of calcifications and cortica thinning. Resembles a large osteoid osteoma.

a. Osteoblastoma***

417. Aka Codman's tumor; benign cartilage forming tumor. Occurs during the 2nd and 3rd decade of life, M>F. Located in the epiphysis of long tubular bones when found in the foot is usually the talus or calcaneus. Symptoms include pain, swelling, and tenderness. Welldefined round or oval osteolytic lesion, eccentrically or centrally located that may have a thin sclerotic border. Secondary changes such as hemorrhagic foci and cystic blood spaces may mimic an aneurysmal bone cyst

a. Chondroblastoma***

418. Malignant tumor of miscellaneous/unknown origin; usually occurs between the age 7-20 yrs. Most commonly located in the metaphysis of the femur, pelvic bones, tibia, and humerus. Symptoms include pain, swelling, fever, weight loss, and leukocytosis. Looks very aggressive, permeative or motheaten osteolytic lesion with cortical erosions, periostitis (onion skin pattern), laminated and a soft tissue mass. Almost exclusively found Caucasians.

a. Ewings Sarcoma***

419. Name the types of non-unions

a. Hypertrophic

i. Elephant foot

ii. Horse hoof

iii. Oligotrophic

b. Atrophic

i. Torison wedge

ii. Comminuted

iii. Defect

iv. Atrophic

420. What study can distinguish between a hypertrophic and an atrophic non-union?

a. Bone scans: positive for hypertrophic and negative for an atrophic non-union.

421. Cancellous graft is better than cortical bone because

a. Cancellous is more osteogenic

i. Vascularization begins immediately

ii. Initial osteogenesis

iii. Graft maintains original strength

iv. Entire graft is replaced with new bone

b. Cortical graft healing

i. Vascular penetration begins on day 6

ii. Takes twice as long as cancellous graft

iii. Increased osteoclastic resorption

iv. Lose 40% strength at 6 weeks to 6 months

v. Most fatigue fractures at 6-18 months.

Cortical Bone	Cancellous Bone
Advantages: Stronger to maintain position. More stable fixation possible.	**Advantages:** Faster incorporatiom Increase osteogenesis Increase osteoinduction and osteoconduction
Disadvantages:	**Disadvantages:**

Slower graft incorporation Less osteogenesis Less osteoconduction	No structural stability Easily distorted position Difficult to fixate

422. What is the most common complication with skin graft?

a. Seroma and hematoma

423. How do you prevent seroma and hematoma

a. Mesh or pie crust graft and apply compressive dressing

424. What are the stages of skin graft healing?

a. Plasmatic

b. Inosculation of blood vessels

c. Re-organization

d. Re-innervation

425. Hypersensitivity IV is an example of what kind of dermatitis

a. Contact dermatitis

426. Caused by contacts with certain substances found in the environment causing inflammation of the epidermis and dermis. For example a patient comes in contact with poison ivy or nickel. Irregular poorly demarcated patches of erythema and edema on which are superimposed closely spaced vesicles, punctate erosions exuding serum and crust.

a. Contact dermatitis

i. Treatment: remove irritant, increase aeration, topical hydrocortisone

427. All of the following are true about lichen planus *(4 P's of Lichen Planus: Purple, Polygonal, Prutitic, Pterygium)*

a. A recurrent, benign, pruritic, inflammatory eruption of the skin, associated with oral lesions in about half of the patients.

b. Most common in people over 40 years of age. Lesions may disappear in weeks or persist for years.

c. 10% of patients develop **pterygium**

d. May result in sudden hair loss in patches on the head

e. Cause:

i. Unknown, may be caused by certain drugs

ii. Stress can precipitate an attack

f. Location of lesions:

i. Symmetrical in the flexor surfaces of the wrists, forearm, lower abdomen, back, and mucous membrane.

g. Presentation:

i. Skin:

1. Flat topped, violaceous, shiny, polygonal shaped papules measuring 2-4mm in diameter with a network of white lines (Wickham's striae)

ii. Mucous membrane (buccal mucosa, tongue, lips)

1. Milky-white papules with a fine white lacework **(wickham's striae)**

2. On rare occasions, long standing oral lesions may develop carcinoma

iii. Treatment:

1. Topical corticosteroids with occlusion

428. Most common types of nevus

a. Junctional nevi (benign – 3 typical variants) – common moles

i. Flat and hyperpigmented

ii. Nevus cells are found at the dermoepidermal junction above the basement membrane

b. Compound nevi

i. Raised and hyperpigmented

ii. Combination of the histologic factors of the junctional and dermal moles

iii. Cells are found both at the dermo-epidermal junction and also in the dermis

c. Intradermal or dermal nevi

i. Raised and flesh colored (sometimes pigmented)

ii. Nevus cells are entirely within the dermis

iii. Common on the face, rarely malignant

d. Blue nevi

i. Regarded as failure of melanocytes from the neutral crust to arrive at the dermo-epidermal junction

ii. The melanocytes are found in the lower dermis and the refraction of light at this level gives rise to the blue color – they are benign

429. What are the two types of vesiculobullous disorders that have a genetic component?

a. Benign Familial pemphigus (Hailey-Hailey disease)

b. Epidermolysis bullosa – represent a defect in skin development such that trauma results in blisters, some form being fatal

↳ Like a Russian detective

430. What is Nikolsky's sign?

a. This sign is present in pemphigus vulgaris. It consists of pressing an existing bulla vertically with the finger tip and seeing an adjacent bulla form as the fluid is gently forced peripherally to cleave the epidermis.

431. What are the three types of vesiculobullous disorders associated with inflammation?

a. Pemphigus vulgaris and its variant (autoimmunity to intercellular epidermal glycoproteins).

b. Bullous pemphigoid (eosinophils in bullae)

c. Friction blisters.

432. A case of a diabetic with non-pruritic bullous lesions

a. SLE

b. Pemphigus vulgaris

433. Tibialis Posterior Tendon dysfunction

a. Tibialis posterior= Prime RF stabilizer: RF inverter to lock MTJ, anti-pronator lies posterior to the AJ axis and medial to the STJ axis.

b. Johnson and Strom Classification of Tibilias Posterior Tendon dysfunction

i. Stage I: tendon length normal; peritendonitits and/or tendon degeneration

1. Foot appears normal, minimal changes on x-ray
2. Gradual onset of pain along tendon course – pain increases with activity
3. Mild weakness on single heel rise test
4. Pathology: Synovial proliferation with possible degeneration, split tears in tendon, enlarged 2x width
5. Treatment:
    a. Conservative: 3-6 of rest, NSAIDS, orthoses (deep heel cup, 4-6mm Kirby skive, medial phalange, inverted device, Richie brace)
    b. Surgical: Synovectomy, tendon debridement, rest (BK cast 3 weeks)

ii. Stage II: Tendon elongated, hindfoot mobile

1. Increase severity and distribution of pain, continues post activity
2. Pain along tendon for moderate length
3. Mobile valgus RF; FF abduction (positive "to many toes" sign)
4. Marked weakness on singe heel rise test
5. X-ray:
    a. AP: FF abduction, navicular subluxed off talar head, increased T-C angle
    b. Lateral: T-N fault, increase talar declination angle
6. MRI: discontinuity and balling up of tendon.
7. Pathology: 2-3 cm tendon degeneration, longitudinal tears, secondary adhesions to sheath. Yellowish white brown appearance, firm consistency, off white, fish flesh proximally. Possible single transverse tear (rounded off ends) 'white sign' proximal to rupture site.
8. Treatment:
    a. FDL transfer, under tension, undersurface of navicular via drill hole.
    b. BK cast 6 weeks & PT.
    c. Kidner, Young, STJ arthroereisis, Evans, Dwyer, Koutsougianis, isolated arthrodesis.

soft-tissue / isolated arthrodesis

iii. Stage III: tendon elongated, hindfoot deformed and stiff

1. Fixed flatfoot
2. Medial pain, more suggestive of DJD.
3. Tendon itself is intrinsically less painful.
4. Fixed/valgus RF with significant eversion and 'too many toes' sign
5. Marked weakness on single heel rise test (may be impossible)
6. X-ray: similar but more marked than stage II= Secondary degenerative changes at STJ, T-N, C-C joint.
7. Treatment: Realignment with STJ arthrodesis

RF arthrodesis

iv. Stage IV: Rigid hindfoot and valgus angulation of talus; early ankle joint degeneration

434. Which type of treatment would you place a patient with stage II PTTD?

a. FDL transfer, under tension, undersurface of navicular via drill hole.

b. BK cast 6 weeks & PT.

c. Medial calcaneal osteotomy, Lateral bone block, AFO, steroid to STJ

d. Kidner, Young, STJ arthroereisis, Evans, Dwyer, Koutsougianis, isolated arthrodesis.

435. What is phenol and how much do you use on a nail procedure?

a. Carbolic acid

b. 89% phenol

436. During a P & A procedure, why is alcohol used after?

a. Phenol is soluble in alcohol, and the alcohol will irrigate excess phenol from the nail groove.

437. Comparison of phenol and sodium hydroxide (1980)
    a. Phenol: 89% phenol x 3 for 30 seconds each
        i. Neutralizer: No neutralizer à flush with alcohol
        ii. Advantages: Phenol has a longer shelf life and cost less than NaOH
        iii. Recurrence rate: 5-10% old phenol, inadequate application or not removing enough nail. Removal of nail matrix is integral to prevent recurrence.
    b. Sodium Hydroxide (1980)
        i. 10% NaOH x 2 15 seconds each
        ii. Neutralizer: 5% acetic acid
        iii. Advantages: less drainage, faster healing
        iv. Recurrence rate: low

438. Often misdiagnosed as plantar fasciitis; an entrapment neuropathy of the first branch of the lateral plantar nerve, also called the nerve to the abductor digiti quinti muscle. Pain with activity.
    a. Baxter neuritis – an entrapment between the quadratus plantae and abductor hallucis muscle

439. What is the most common type of distal tarsal tunnel syndrome>
    a. Baxter nerve entrapment

440. What is the treatment for Baxter neuritis?
    a. Conservative: NSAIDS, low dye strap, orthotics, ice, corticosteroid injection, decrease activity level
    b. Surgery: the procedure of choice is neurolysis
        i. Through medial incision bluntly dissect down to the superficial and deep fascia of the abductor hallucis muscle and perform a vertical incision through these structures and remove a segment of these tissues
        ii. Follow the nerve plantarlyand resect a portion of the plantar fascia
        iii. The nerve is superior to the spur (if spur is present)

441. If you had to decompress Baxter nerve, what structures you would encounter?
    a. Superficial and deep fascia of the abductor hallucis muscle
    b. Quadratus plantae
    c. Plantar fascia
    d. Abductor digiti minimi

442. Which of the following surgeries spare the MTJ?
    a. Mayo: first met resection for correction of HAA with HL/HR
        i. Resection of one quarter inch of the 1st metatarsal head and medial eminence

443. **They are herniation of the joint linings and often associated with exostoses**à **most common of all lesions affecting the joints and joint structures. Occurs commonly over the wrist and ankle heel or dorsum of the foot and long the dorsal of the foot often from the extensor tendon sheaths. Very low T1W image intensity and very high T2 W image intensity**
    a. **Ganglion cyst**

444. **In a T1 W MRI of the foot, which of the following lesions have the lowest signal intensity? Select 3 that apply**
    a. **Ganglion cyst**
    b. **Unicameral bone cyst**
    c. **Adamantinoma**
        i. Tissues consisting primarily of water have the lowest signal on T1W image

445. According to HIPPA, who has access to patient's records?
    a. Lawyer representing patient

446. Pneumonia
    a. Bacterial: Staph, Strep, H. influenza, P. aeruginosa, and coliform bacteriaà bronchopneumonia (patchy consolidation)
    b. Pneumococcus – most common lobar pneumonia (entire lobe)

447. Types of insulin to give per-op
    a. NPH – intermediate acting
    b. Lantus – long acting
    c. Regular – short acting

448. Which of the following lab test gives an indication of autoimmune disease?
    a. ANA (Antinuclear antibody)
        i. Normal value = negative
        ii. Used to detect connective tissue disease
        iii. The standard screening test for SLE
        iv. Conditions:
            1. Lupus – 99% positive
            2. Scleroderma – 73% positive
            3. RA – 60% positive

4. Sjogren's – 43% positive
5. Dermatomyositis – 33% positive
6. Polyarterirtis – 22% positive

449. Which lab test can help you detect an immune disease?
a. CBC

450. Test for malignant hyperthermia
a. Caffeine Halothane Contracture Test (CHCT)
i. Is the standard for MH diagnostic test and is used to determine a patient's susceptibility to MH
ii. Patient must be referred to specialized CHCT centers in order to have the special biopsy for CHCT performed
iii. MH experts generally feel a child less than 10 years old is NOT a good candidate for the testing
iv. Muscle biopsies for CHCT must be performed at one of the designated CHCT testing centers because the test must be performed on fresh tissue.

451. C-Reactive protein
a. Normal value: <0.8 mg/dl.
b. Similar to ESR in that it is **non-specific indicator of inflammation and tissue trauma**
c. This protein is virtually absent in healthy persons.
d. May be more valuable than ESR because it becomes elevated sooner (6-10 hours after tissue trauma) and returns to normal sooner once the inflammatory process stops.
e. Tests inflammation, infection; IBD, arthritis, PID, autoimmune

452. Erythrocyte Sedimentation (ESR)
a. Normal value varies by sex, age, and method.
b. The test measures the rate at which RBCs settle out of unclotted blood.
c. Non-specific test to follow the progression of disease.
d. ESR rate increases with infection, inflammation, and malignancy

453. ASA classification for general anesthesia
a. Class 1 – healthy
b. Class 2 – mild systemic disease
c. Class 3 – severe systemic disease
d. Class 4 – incapacitating systemic disease that is a threat to life
e. Class 5 – moribund patient who is not expected to live without surgery (emergency)

454. What is the difference between a chisel and an osteotome?
a. Chisel: slant on one side
b. Osteotome: slant on both sides

455. Which classification is a true Jones fracture?
a. Stewart Classification
i. Type I: supra-articular fracture occurring at the metaphyseal-diaphyseal junction (Jone's fracture). Considered extraarticular
ii. Type II: intraarticular fracture of the 5th met base
iii. Type III: Extraarticular avulsion fracture of the styloid process
iv. Type IV: Intraarticular comminuted fracture
v. Type V: Extraarticular avulsion of epiphysis children only. Longitudinal fragment (Salter-Harris type I) *[What is the equivalent to Salter Harris 1 fx? Stewart V fx]*

456. In a type IC calcaneal fracture, what is the mechanism of injury?
a. Plantarflexion force on a supinated foot - Avulsion via bifurcate ligament.

457. Rowe Calcaneal fracture classification
a. Type IA: Fracture of medial tubercle (calcaneal tuberosity fracture)
i. Medial: more common, heel everted on fall, abductory force
ii. Lateral: heel inverted on fall, adductory force
b. Type IB: Sustentaculum tali fracture
i. Tenderness on hallux movement b/c of FHL course
ii. Mechanism:
1. Excessive eversion on fall from height.
2. Force on medial foot with valgus heel
c. Type IC: Fracture of the anterior process
i. Intra or extra articular; most common, often improperly diagnosed as ankle sprain
ii. Mechanism:
1. Avulsion via the bifurcate ligament
2. Plantarflexion force on a supinated foot
d. Type IIA: beak fracture (no Achilles involvement)
i. Mechanism: direct trauma

e. Type IIB: Tendo Achilles avulsion fracture
i. Mechanism: violent contraction gastroc-soleus, foot fixed
f. Type III: Calcaneal body fracture (extra-articular)
i. Most common extra-articular type, talus impacts calcaneus
ii. Mechanism: fall from height with heel valgus or varus
g. Type IV: Fracture involving STJ without joint depression
i. Mechanism: fall from height
h. Type V: Comminuted fracture with central or severe depression
i. Mechanism: Fall from height

458. What is the most common navicular fracture?
a. Dorsal lip

459. Watson-Jones Classification
a. Type I: navicular tuberosity fracture
b. Type II: Dorsal lip fracture
c. Type IIIA: Transverse body fracture, non-displaced
d. Type IIIB: Transverse body fracture, displaced
e. Type IV: navicular stress fracture

460. How would you treat a type III, IV, V Salter Harris fracture?
a. ORIF

461. How would you treat Type I and II Salter Harris fracture?
a. Close reduction

462. Order the Ponsetti correction
a. ADDUCTION, VARUS and EQUINUS
i. Adduction, Inversion, Internal Tibial Rotation, Equinus (this is what they put)
ii. Do Not Evert or Pronated the Foot
iii. Most effective in first 9 months of age
iv. Weekly cast changes and manipulation for 6 weeks, then maintained for 3 months with abduction brace and night splints
b. Ponsetti method:
i. Manipulation 10-15 minutes
ii. Abduct FF
iii. Evert
iv. Distract heel
c. Serial Casting: AVE
i. #1: FF ADDUCTUS
ii. #2: VARUS
iii. #3: EQUINUS
d. Complications:
i. Rocker bottom, flat top talus, or talar AVN, metatarsus adductus, pes valgus, overcorrection, wedge shaped navicular

463. Characterized by excessive dorsiflexion of the ankle and eversion of the foot. Caused by intrauterine position. Dorsal surface of the foot is in contact with the anterior surface of the leg. Usually resolves spontaneously with growth but may require serial casting
a. Calcaneovalgus

464. **A true AVN of the navicular seen in males around 5 y/o. It presents with localized pain, edema, tenderness, and decreased ROM.** Some patients have a congenitally smaller navicular. On x-ray the appearance should be patchy or uniform sclerosis, collapse (silver dollar sign) and fragmentation of the bone. The joint space is usually preserved
a. Kohler's disease

465. Most commonly found in first-born females born in the breech position.
a. Developmental Dysplasia of the Hip
i. Also called congenital hip dislocation; can result in subluxed, dislocatable, or dislocated femoral heads, leading to early degenerative joint disease of the hips.
ii. Dislocations result from poor development of the acetabulum and hip due to lax musculature and from excessive uterine packing in the flexed and adducted position (breech presentation), leading to excessive stretching of the posterior hip capsule and adductor muscle contracture.

466. Definition of vertical talus
a. Primary "button-hole" dislocation of the navicular dorsally on talar neck locking the talus in vertical position. Primary joint deformity is the TN joint in a pronatory position. Secondary joint deformity STJ,CC and AJ . Equinus and rigid pronation with a contracted Achilles and elongated spring ligament.
b. Is a complex deformity involving bone, tendon, capsule and soft tissue abnormality. It has a similar appearance at birth to talipes calcaneovalgus, but there is lack of motion at the subtalar joint and ankle joint

within 6 months after birth, a negative inclination angle, and complete dislocation of the talonavicular joint. It cannot be reduced with serial casting

c. Congenital vertical talus presents at the talus fixed in a vertical position with hypoplasia of the talar neck and head. The navicular is dislocated and articulates with the dorsal aspect of the talar neck. The tibionavicular and dorsal talonavicular ligamets are contracted preventing reduction of the navicular.

d. Primary joint deformity = Talonavicular

e. Secondary joint deformities = subtalar, calcaneocuboid, ankle

467. What is another name for vertical talus?

a. Congenital Convex Pes Valgus

468. What are radiographic findings of CCPV?

a. Calcaneus in equinus, plantarflexed talus, dorsally dislocated navicular, increased talocalcaneal angle

469. Definition of disease

a. A disorder of structure or function in a human, animal, or plant, especially one that produces specific signs or symptoms or that affects a specific location and is not simply a direct result of physical injury

470. Capitation is generally part of which of the following health care delivery systems?

a. HMO

i. Capitation is fixed periodic HMO payment calculated to cover the expected cost of providing services to patients over a period of time.

ii. Takes the risks from insurance to physician

471. What are the symptoms of lidocaine toxicity?

a. Anxiety, CNS excitement; up, then down

472. How much dosage in 5 cc of 2% lidocaine plain

a. 100 mg ***[****For 1% lido it is 10mg/1cc (simplified from 300mg/30ml), but for 2% you double the amount of mg you have per cc; so 20mg/1cc. Final answer= 100mg]*

473. What is the effect of adding epinephrine to local anesthetic? *[basically vasoconstriction results in reduced absorption and therefore prolongs duration]*

a. Reduced vascularity locally at the site of injection (due to vasoconstriction)

b. Reduces the absorption rate of local anesthetics

c. Permits a higher allowable single dose of local anesthetic to be used

d. Increase duration of action of the block

474. Definition of global cavus

a. FF is plantarflexed & RF is dorsiflexed

475. A kid with + gastrocnemius and gastrocsoleus equinus, what is the procedure of choice?

a. Gastrocnemius recession

476. A patient has gangrene on distal toe where do you amputate?

a. Proximally

477. Why are cat bites more susceptible to infections?

a. Cat teeth are thin ad sharper = deep puncture wounds à **puncture wound** à **infection**

478. What is dynamization?

a. Increase bone healing by compression

i. After removal of the plate, the bone may be prone to re-fracture during weight bearing because of weakening of the bone from disuse osteopenia. To prevent this complication it is important to gradually release tension in the transosseous wires and loosen the pins to allow the bone to gradually strengthen as it bears weight.

479. Ingesting poppy seeds can give a false positive test for which drug?

a. Opiates (Morphine, Codeine)

480. When would a physician considered liable for inadequate care?

a. Not meeting the standard level of care another physician would provide.

481. Which of the following drugs would you NOT stop in a patient prior to surgery?

a. Atenolol (beta blockers)

482. Thyroid Disease

a. The thyroid gland is located in the base of the neck of both sides of the lower part of the larynx and upper part of the trachea. The gland produces TH in response to stimulation by TSH from the pituitary gland

b. TH acts throughout the body to regulate metabolism and increase iodine à essential trace element used in the production of thyroxine/triiodothyronine.

c. Diagnostic screening: Thyroid function tests: elevation of free T4 test serum TSH T3

483. Hyperthyroidism/Hypothyroidism related disease

a. Hyperthyroidism – muscle weakness and atrophy (GRAVE'S DISEASE)

i. Autoimmune activation of TSH receptors which leads to a feedback inhibition of TN

ii. Signs/Symptoms: Weight loss, increased appetite, nervousness, goiter, pre-tibial myxedema, HTN, opthalmapathy, and dermopathy. Restlessness, heat intolerance, increases sweating, fatigue, frequent bowel movements, menstrual irregularities. Distal neuropathy with brisk DTRs

iii. Treatment: antithyroid meds, radioactive iodine or surgery to remove the thyroid à replacement TH must be taken for the rest of the person's life

b. Hypothyroidism – weakness and pain (HASHIMOTO THYROIDITIS)

i. Autoimmune disorder, results in cretinism in infancy and myxedema in adults.

ii. Increase mucopolysaccharides in connective tissue à to edematous thickening of the skin.

iii. Most common cause of goitrous hypothyroidism

iv. Signs/Symptoms: intolerance to cold, weight gain-mild, fatigue, constipation, enlarged neck or presence of goiter, dry skin, hair loss, small or atrophic thyroid gland (late in the disease). Heavy or irregular menses, difficulty concentrating or thinking, joint stiffness, distal neuropathy with delayed DTRs

v. Treatment: Replacement therapy with thyroid hormone (levothyroxine) is give if the hormone is deficient or may be given if there is evidence of mild thyroid failure (such as elevated TSH), also known as subclinical hypothyroidism

c. CK elevated 10x normal with minimal muscular involvement; adults have muscle hypertrophy with cramps (Hoffmann'ssyndrome)

484. A person with hallux valgus which ligament gets disrupted?

a. Deep transverse metatarsal ligaments

b. Medial and lateral collateral ligaments

485. A case of a patient sweating, shortness of breath, what would you suspect?

a. Local anesthetic allergy rxn

486. What do you do prior to providing shock?

a. Location of electrodes on patient

487. Which view better to visualize clear spaces of ankle?

a. Ankle mortise

488. How do you evaluate for medial ankle sprain?

a. Medical clear space on mortise should be less than 4mm

489. Which are the rems for the lens of the eyes?

a. 15 rems

490. Vicarious liability?

a. Employer is responsible for employee mistakes

b. Holding one person criminally liable for the criminal acts of another.

491. Which are other fluids that can be infectious?

a. Feces, vomit, fluid with blood

492. A physician can leave a patient as long as he does it with a written notice

a. True

493. Definition of worksman comp insurance?

a. Insurance that covers medical and rehabilitation costs and lost wages for employees injured at work; required by law in all states

494. An x ray looks washed out, name two conditions:

a. Osteoporosis – it is the absolute reduction in bone mass and density

i. Overall loss of bone itself: loss of calcified and osteoid component à associated with vitamin D deficiency and inactivity.

b. Osteopenia – is a generalized term to denote a relative loss in bone density regardless of any etiology

495. When can a patient change a surgical consent?

a. Anytime before surgery and before he has received pre-op sedation

496. A rare osteosclerotic disorder characterized by a failure of osteoclastic resorption and the radiographic presence of "bones within bones"

a. Osteopetrosis***

i. Albers-Schoenberg disease (osteogenesis imperfect) also known as brittle bone disease – medulla is completely destroyed (all bone is cortical). Existing bone thus has no shock absorbing ability and is very brittle

ii. It is a hereditary disorder in which the osteochondroid tissue of developing bone fails to mature into medullary and lamellar bone. The basic defect is failure of osteoclast to absorb primary spongiosa during enchondral bone formation.

497. A hereditary disorder that present as multiple compact bone islands existing within normal bone. Also known as spotty bone disease. The disease is asymptomatic and is usually an incidental finding. Turnover is very high, such that two radiographs shown in the same year may show completely different presentations.

a. Osteopoikilosis***

i. A hereditary spotted bone disorder transmitted as an autosomal dominant

498. On radiographic analysis, the bones of one foot demonstrate a flowing "candle wax" hyperostosis adhering to a sclerotomal pattern of distribution. The most likely diagnosis is:

a. Melorheostosis***

i. "flowing hyperostosis" that looks like candlewax dripping down the bone

ii. Etiology is unknown; no gender predilection

iii. Joint effusion with decreased ROM and contracture, one limb affected, muscle wasting, lymphedema all are symptoms

iv. X-rays show wavy cortical thickening, narrowing of endosteal space

499. What type of orthotic modification you use for a metatarsus elevatus, hallux limitus and rigidus?

a. Morton's Extension

500. Which factors contribute to damage radiation?

a. **Age** and **Amount of radiation**

501. What is the insertion of plantaris muscle?

a. Medial to Achilles

502. Plantaris Muscle

a. Origin: Lateral to the supracondyle of the femur

b. Inserts: Medial side of the posterior part of the calcaneus and Achilles tendon.

c. Nerve: Tibial nerve

d. Action: Plantarflexing of the foot.

503. What is the size of the Posterior tibial tendon on a cross sectional image?

a. 2x size of FDL

504. What is the main effect of a patient who is unable to mount a Natural Stress response after surgery

a. Diabetic coma, impaired wound healing

505. Longtime patient who is usually well groomed presents with wrinkled clothing and is not very talkative and appears sad, what is the most likely issue?

a. Depression

506. How do you fixate the 5th metatarsal fracture?

a. NWB SLC 4-6 weeks with non-displaced fractures

b. ORIF for displacement >5mm

c. Consider excision of fragment and reattachment of the peroneus brevis muscle

507. Ankle Foot Orthoses (AFO) function

a. Controls foot and ankle movement

b. Composed of thermoplast (polypropylene)

c. "Old" style AFO constructed of leather and steel

d. Intrinsic (modern) and extrinsic (old) types

e. Fixed, hinged and dynamic types

f. Richie brace (fixed) may serve as an AFO

508. AFO indications

a. Dropfoot deformity

b. Other paralytic/neuromuscular conditions

c. Ankle Joint arthritis

d. Unstable gait

e. Severe foot deformity

509. AFO's are primarily for

a. Drop foot

510. AFO – Ankle foot orthoses Types

a. Fixed

b. Hinged

c. Dynamic: dorsiflexion – assist (spring loaded)

511. Nail with 40% hematoma- what do you do? *[>25% hematoma you take the nail out]*

a. Remove nail; likely laceration

512. What does attorney-client privilege mean?

a. An attorney can never testify against his client

b. An attorney cannot testify against his client in regards to specific legal services he was retained for.

513. When would a Physician need a separate DEA number? *[basically everywhere]*

a. To treat patients who live in each state

b. Every hospital where they have privileges

c. Every office where they prescribe Controlled Rx

d. Every office where they store and distribute controlled Substances

514. Minimal labs to order for Lamisil treatment

a. AST, ALT, CBC, platelet count

515. An inherited autosomal dominant connective tissue disorder resulting in abnormal elastic tissue and collagen production and excessive laxity. Hyperextensible joints and ligamentous laxity result in hallux valgus and pes planus, and kyphoscoliosis. The radiographic hallmark is exaggerated length of the bones

a. Marfan's syndrome

i. The lens of the eye is also displaced usually upward.

ii. Most serious complication is a dissecting aneurysm of the aorta.

516. Gerver Osteomyelitis = Pediatric Osteomyelitis

a. Osteomyelitis, or inflammation of the bone, is usually caused by bacterial infection. Bone infections in children are primarily hematogenous in origin, although cases secondary to penetrating trauma, surgery, or infection in a contiguous site are also reported.

b. Approximately 50% of cases occur in preschool-aged children. Young children primarily experience acute hematogenous osteomyelitis due to the rich vascular supply in their growing bones. Circulating organisms tend to start the infection in the metaphyseal ends of the long bones because of the sluggish circulation in the metaphyseal capillary loops.

517. **What is the Ortolani test?** *[Simply put, Barlow dislocates the hip, and Ortoloni relocates it]*

a. Test for congenital hip dislocation in newborns.

i. With newborn supine and hip and knees flexed, the hips are adducted while pressing downward and abducted while lifting upward. An unstable hip will dislocated when adducted and reduce when abducted.*[Abducted hip will pop back into place]*

518. What is the Barlow test? *[popping head of femur posteriorly]*

a. Test for a hip that is dislocated but not dislocated in infants. With infant supine and hip and knee flexed, push posteriorly in line with the shaft of femur. An unstable femoral head will dislocate posteriorly form acetabulum.

519. What is the Galeazii (or Allis) sign? *[basically comparing heights of knees]*

a. Sign of unilateral congenital hip dislocation in infants. With infant supine and hip and knees flexed, the knees should be level. If a knee is lower, that hip is dislocated.

520. What is the trendelenberg test?

a. Test for weak hip abductors. As patient stands on affected limb, pelvis drops to opposite side.

521. A 50-year-old patient who comes in with an infected wound and the doctor suspect he has osteomyelitis after bone resection. What is the next step in treatment?

a. IV abx for at least 6 wks, debridement

522. A case about IM angle greater than 18, what type of procedure do you do?

a. Base procedure

523. Place the type of study in order of reliability or objectivity

a. Random => retrospective => case report => cadaver

b. Level of evidence (BEST to LEAST)

i. Meta analysis

ii. Systemic Reviews

iii. Randomized controlled trials

iv. Cohort studies

v. Case control studies

vi. Case series, case reports

vii. Editorials, expert opinion

524. Minimum time to have surgery after person suffered from MI or stroke

a. Greater than 6 months

525. In a tarsal tunnel release which structures do you separate?

a. Flexor retinaculum and deep fascia

526. For anesthesia, what cannot be given to a patient with an eggshell injury?

a. Propofol (Diprivan)

527. Who will fuck you up in court?

a. Another podiatrist

528. What is the most dangerous portal?

a. Post medial portal

529. Ankle Arthroscopy

a. Anterior-medial port

i. Medial to TA

ii. Lateral to saphenous vein and nerve

b. Anterior Lateral port

i. Lateral to Peroneus tertius

ii. Medial to intermediate dorsal cutaneous nerve

c. Posterior lateral port
i. Lateral to Achilles tendon, 1-2cm distal to anterior ports
d. Anterior central port
i. Just lateral to FHL
ii. Medial to DP and deep peroneal nerve, medical dorsal cutaneous nerve crosses over FDL at this level and may be lateral
iii. Due to all of the potential complications, this port is usually contraindicated
e. Posterior medial port (most dangerous)
i. Medial to the Achilles tendon
ii. Also in this area: FHL, FDL, Posterior tibial nerve and artery, calcaneal artery

530. Autoimmune primary chronic adrenocortical deficiency leading to decreased production and secretion of the adrenal hormones (hypocortisol) secondary to deficiency in ACTH resulting in hyperkalemia and nyponatremia. *[basically a non-responsive adrenal gland]*

a. Addison's disease
i. Most symptoms are nonspecific
ii. Weaknesses, fatigue, anorexia with weight loss are common. GI manifestations, hypotension, and salt carving are also seen.
iii. Hyperpigmentation (due to increase in ACTH secretion) is seen in Addison's disease, especially in areas of sun exposure or friction.
b. Diagnosis:
i. Labs shoe hyponatremia and eosinophilia (1 or 2)
ii. Hyperkalemia is specific to primary AI. Hypercalcemia is seen in up to one third of cases.
iii. Diagnosis is confirmed with plasma cortisol levels
iv. Confirmatory test with synthetic ACTH stimulation test: A plasma cortisol level of >20ug/dl excludes the diagnosis
c. Treatment:
i. Glucocorticoids replacement, mineralcorticoid replacement, and IV fluids.
ii. The 4 S's of adrenal crisis management:
1. Salt: 0.9% saline
2. Steroids: IV hydrocortisone 100m q8h
3. Support
4. Search for underlying illness

531. Caused increased cortisol, aldosterone, and the sex hormones. Central obesity, moon facies, abdominal striae, weakness, hirsutism, and osteoporosis are clinical features of this. Other s/s includes persistent HTN (due to aldosterone like effects) and insulin resistance, leading to hyperglycemia, hyperkalemia and may develop DM. If untreated, it can lead to heart disease and increase mortality

a. Cushing's disease

532. What suture material is absorbed by hydrolysis?

a. Vicryl (polyglactin 9-10)
i. Synthetic monofilament
ii. 75% of original tensile strength remain at day 14.
iii. Absorption complete between days 56-70 by hydrolysis

533. Absorbable sutures

a. Vicryl (polyglactin 9-10)
b. Plain gut – natural multifilament
i. Digested by body's own enzymesà more reactive than synthetic
ii. Rapidly absorbed, tensile strength maintained 7-10 days. Completely absorbed in 70 days
c. Chromic gut – natural multifilament
i. Chromic NaCl solution to resist body's enzymes, prolonging absorption over 90 days
d. Monocryl (poliglecaprone) – Synthetic monofilament
i. Tensile strength remains at day 14
ii. Absorption complete at 91-119 days
e. PDS(Polydiaxone) – synthetic monofilament
i. 70% of original tensile strength remain at day 14, absorption minimal until about 9 days completely absorbed at 6months.

534. The less reactive the suture, the less risk that it may potentiate infection. What are the less reactive types of sutures?

a. Synthetic
b. Monofilament
c. Non-absorbable

535. MRI with signal on origin of TA- Tendinosis/ tendonitis, partial rupture

536. Which of the following would make the film darker? Choose two

a. Increase KVP and/or MA

b. Kvp – Maximum peak potential difference

i. Quality/penetrating power of x-rays produced

ii. Lower kVP will have a greater penetrating power, and will produce less contrast

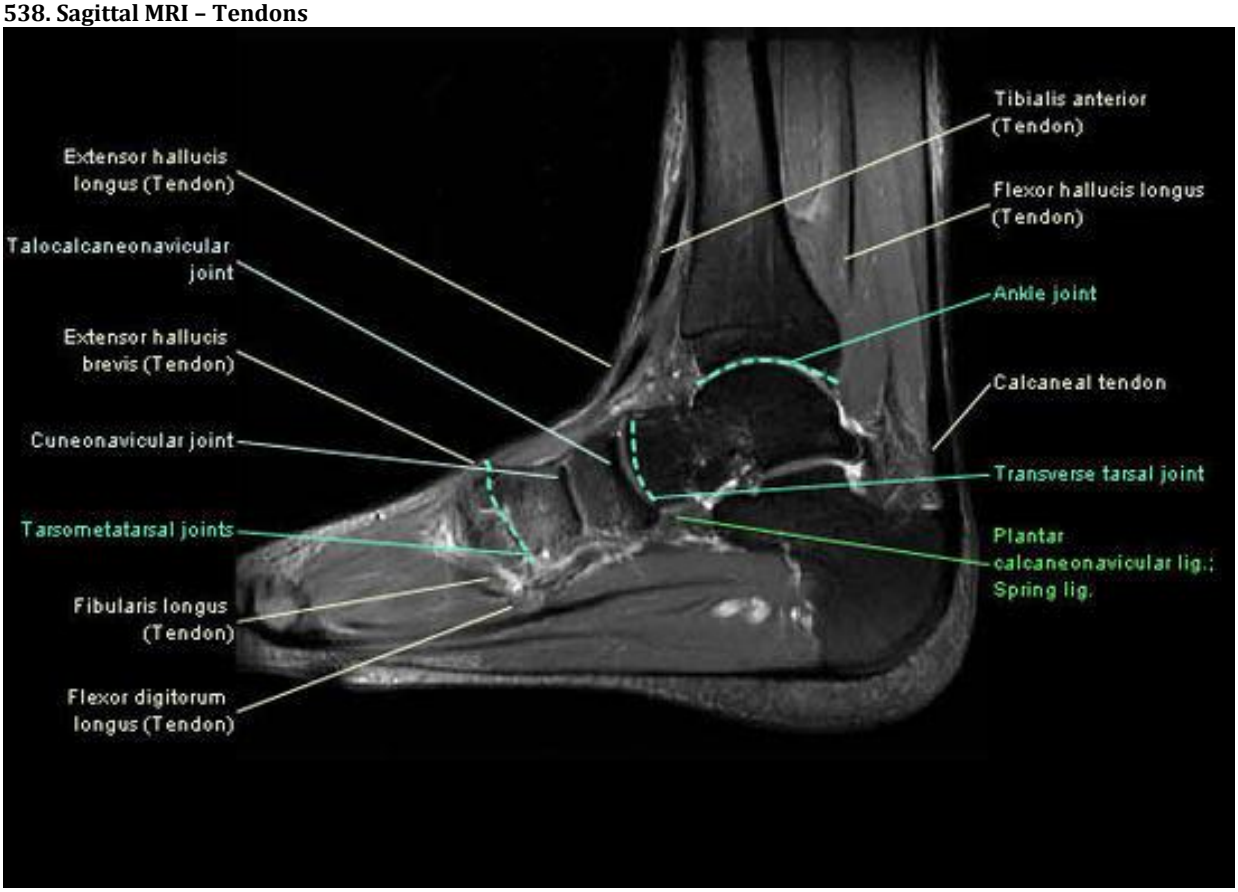
c. mA- quantity of x-rays

i. The higher the mA à increases penetrating power, and will produce less contrast – less soft tissue detail and increased radiographic density

537. Definition of density

a. the degree of compactness of a substance: a reduction in bone density

538. Sagittal MRI – Tendons



539. Anterior Cyma break

a. Pronation

540. Coxa Valga

a. Angle of femoral inclination >128 degrees

b. Most commonly secondary to dysplasia of femoral head and usually bilateral

c. Occurs concomitantly with Genu varum

d. Bow legs

541. Coxa Vara

a. Angle of femoral inclination <120 degrees

b. Can occur secondary to trauma or abnormal development of femoral head and neck

c. Common etiology of this condition is "slipped femoral epiphysis"

d. May occur with Genu Valgum (knock knees)

542. Normal angle of femoral antetorsion (declination)

a. Birth= 30-35

b. Adult= 10-12

543. Femoral retrotorsion (external femoral torsion)

a. Femoral declination angle < 10 degrees

b. Knee joint deviated externally

544. Normal malleolar position and tibial torsion

a. 13-18 = malleolar

b. 18-23 = tibial torsion

c. Tibial torsion is 5 degrees more than malleolar position

545. People that smoke has a higher risk of developing what kind of cancer?

a. Lung Cancer

546. What is the most common etiology of acute rheumatic fever?

a. Streptococcal pharyngitis *[Group A Strept]*

547. Typical streptococcal pharyngitis

a. Fever, sore throat, pharyngeal erythema, tonsillar exudate, cervical lymphadenopathy, soft palate petechiae, headache, vomiting and a scarlatiniform rash (indicates scarlet fever)

548. Atypical of streptococcal pharyngitis

a. Coryza, hoarseness, rhinorrhea, cough**,** conjunctivitis, anterior stomatitis, ulcerative lesions, GI symptoms

549. **Acute Pharyngitis**

a. **Viral causes are more common (90% in adults), but it is important to identify streptococcal pharyngitis (group A beta hemolytic streptococcus pyogenes)**

b. Bacterial: Group A streptococci GAS, Neisseria gonorrhoeae, Corynebacterium diphtheria, M. pneumonia

c. Viral: Rhinovirus, coronavirus, adenovirus, HSV, EBV, CMV, influenza virus, coxsackievirus, acute HIV infection.

d. Diagnosis: by clinical evaluation, rapid GAS antigen detection, and throat culture. With 3 or 4 of the centor criteria, the sensitivity of rapid antigen is >90%

e. Treatment: If GAS is suspected, begin empiric antibiotic therapy with penicillin x10 days. Cephalosporins, amoxicillin and azithromycin are alternative options.

550. Which of the following conditions exhibits demyelination, which comes and goes?

a. Multiple Sclerosis (most common demyelinating disease)

i. Mostly white matter of cervical region; random and asymmetric lesions due to demyelination

ii. Scanning speech, intention tremor and nystagmus (SIN)

iii. Pt. presents with multiple neurologic complaints that are separated in time and space and are not explained by a single lesion

iv. Limb weakness, **optic neuritis,** paresthesias, diplopia, vertigo, nystagmus, gait unsteadiness, urinary retention, sexual and bowel dysfunction, depression, and cognitive impairment. Symptoms worsen transiently with hot showers.

v. Evidence of an autoimmune etiology is a genetically susceptible individual who are exposed to environmental triggers such as viral infections.

vi. MS becomes more common as one moves farther away from the equator

vii. The prognosis is best with a relapsing and remitting history

viii. Lhermitte's sign- demonstrated by sharp pain traveling up or down the neck and back with flexion, generally suggests the presence of cervical myelitis

ix. Treatment: Avonex/Rebif, Betaseron, Copaxone

551. What is the most common presenting symptom of multiple sclerosis (MS)?

a. Optic neuritis (25%)

552. The integrity is dependent upon spinal nerves L3 and L4 an elicited on a slightly extended knee

a. Patella DTR

553. Integrity is dependent upon spinal nerves S1 and S2 (reflex response is present when the foot responds in plantarflexion).

a. Achilles DTR

554. Which agency provides healthcare for Native American Indians?

a. Indian Health Services

i. Provides a comprehensive health services delivery system for American Indians and Alaska natives with opportunity for maximum tribal involvement in developing and managing programs to meet their healthy needs.

555. Which of the following muscles is the strongest pronator of the STJ Joint?

a. Peroneus brevis

556. Transverse avulsion fibular fracture BELOW the level of syndesmosis

a. **Danis Weber A**

557. Danis Weber Classification

a. Type A: Transverse avulsion fibular fracture BELOW the level of the syndesmosis

i. SAD – Supination/Adduction

b. Type B: Spiral fracture at the level of syndesmosis

i. PAB – Pronation/Abduction

ii. SER – Supination/ External rotation

c. Type C: Fibular fracture ABOVE the level of the syndesmosis

i. PER – Pronation/External rotation

558. Accessory bone mistaken for Shepard's fracture

a. Os trigonum

559. What type of incision is used for Talipe equinovarus?

a. Turco: medial hockey stick over tarsal tunnel

b. Cincinnati: posterior medial to lateral malleolus

560. Drug of choice for panic disorder

a. Ativan *[Lorezapam]*

561. Usually used in allergies to PCN; most common adverse reaction is diarrhea and pseudomembranous colitis

a. Clindamycin

i. Inhibits the protein synthesis of bacteria by binding to 50S ribosomal subunit= bacteriastatic, must double cover

ii. Gram positive and anaerobes; does NOT cover gram negative aerobes

iii. 300mg PO q8-12 h or 600-900mg IV q12h

iv. PO, IV, IM, good absorption PO with long . life

562. How is a contract formed?

a. A contract comes into being when an offer is made by on party, accepted by another party, and consideration passes between them. A contract may be either implied or expressed

563. How is the doctor-patient relationship usually established?

a. By implied contract, without verbally expressed terms

i. An example of implied contract: When a patient presents himself for examination and treatment, but does not discuss payment terms with the doctor, the doctor is still entitled to payment.

564. Most frequently occurring value or number

a. Mode

565. Measures of central tendency are used as summary measures to describe data

a. Mean – numerical average

b. Median – middle most value in a set of numbers or values

c. Mode – most frequently occurring value or number

566. Dilated cardiomyopathy (floppy ventricle), mitral valve disease; often normal in younger patients and in high output states (like pregnancy)

a. S3 gallop***

567. Hypertension, diastolic dysfunction (stiff ventricle), aortic stenosis; often normal in younger patients an athletes

a. S4 gallop***

568. MRI T2: water (inflammation)

569. What are the two variables that Blix refers to on his contractile force curve?

a. Tension versus length

570. Are the results of an anatomic short limb usually due to congenital or developmental factors

a. Structural leg length discrepancy

571. Patients with different biomechanics due to spinal problems, muscular weakness, restricted range of motion at ankle, knee, and hip can lead to compensation that can lead to

a. Functional leg length discrepancy

572. What type of classification is for a fracture on the anterior process of the Calcaneus?

a. Rowe Type I C

573. Calcaneal fracture – ROWE CLASSIFICATION

a. Type IA – Fracture of the medial tubercle

b. Type IB – Fracture of the sustentaculum tali

c. Type IC – Fracture on the anterior process of the calcaneus

d. Type IIA – Beak fracture (without Achilles attachment)

e. Type IIB – Tendo-achilles avulsion fracture

f. Type III – Extra-articular body fracture

g. Type IV- Fracture involving the STJ (intra-articular) without joint depression à poor prognosis

h. Type VA- Comminuted, intra-articular fractures with central depression à poor prognosis

i. Type VB – Comminuted fractures with severe joint depression à poor prognosis

574. Fracture of the physeal plate progressing into the metaphysis proximally, leaving metaphyseal spike called Thurston-Holland sign. Most common acute physeal injury

a. Salter Harris Type II

575. SALTER HARRIS CLASSIFICATION – Epiphyseal fractures

a. Type I: separation of the physis without osseous fractures (SAME)

b. Type II: fracture of physeal plate progressing into the metaphysis proximally, leaving a metaphyseal spike called Thurston Holland sign (ABOVE)

c. Type III: physeal plate fracture propagating distally through the epiphysis, usually creating an intra-articular fracture (BELOW)

d. Type IV: fracture line transverse through the metaphysis, physeal plate, and epiphysis

e. Type V: crush injury to epiphyseal plate
f. Type VI: (RANG's addition) avulsion of peri-chondral ring
g. Type VII: (OGDEN's addition) avulsion fracture of the epiphysis without involvement of the physis

576. What is the gliding hole size for a thread diameter mini-fragment of 2.7?
a. 2.7 (gliding hole does not change)

577. What is the difference between coalition and a bar?
a. Coalition – intra-articular fusion of 2 bones
b. Bar – extra-articular fusion

578. What is the most common coalition in the foot?
a. Distal and middle phalanx of the 5th digit

579. What is the most common coalition in the rearfoot?
a. Talocalcaneal

580. Pedal Coalitions
a. A coalition is a union of separate things into a single body or group
b. True coalition – are intra-articular fusions of bones
c. Bar/bridge coalition- are extra-articular fusion of bones
d. Complete coalition - is osseous and limits all motion
e. An incomplete coalition – is an union by fibrous or cartilaginous tissue
f. A rudimentary coalition – is an osseous projection which limits motion but does not produce a union of parts

581. Tarsal Coalitions
a. Occurs in 1-2% of the population and consist of the talocalcaneal (most common), calcaneonavicular, talonavicular (least common)
b. Ossification of coalition
i. Talocalcaneal (most common)=12-16 y/o
ii. Calcaneonavicular = 8-12 y/o
1. Most symptomatic
iii. Talonavicular (least common)= 3-5 y/o
1. Usually asymptomatic
c. S/Sx: stiffness, decreased ROM, pain, peroneal spasm, anterior/posterior tibial spasm, local POP, pronation, cavus deformity, and fixed rearfoot valgus.
d. What are radiographic findings of tarsal coalitions?
i. Rounding of lateral talar process
ii. Talar beaking due to increased stress on talonavicular ligament
iii. Asymmetry of anterior subtalar facet
iv. Narrowing or absence of middle and posterior subtalar facets
v. Halo sign: Circular ring of increased trabecular pattern due to altered compressive forces
vi. Anteater sign: C-N coalition in which calcaneus has enlongated process on lateral view
vii. Putter sign: T-N coalition in which neck of talus unites with broad expansion of navicular.
e. The anterior facet is best seen in the medial oblique, Ischerwood radiographic view
f. The middle and posterior facets are best seen by Harris beath view

582. A patient presents with decreased range of motion, peroneal spasm, and pain on palpation, what should you consider?
a. Tarsal coalitions

583. What ligaments are cut during a fibular sesamoidectomy?
a. Inter-sesamoidal ligament
b. Fibular sesamoid ligament
c. Plantar sesamoidal ligament (medially and laterally)
d. Lateral collateral ligament

584. Stance Phase – Closed Kinetic Chain
a. Occurs during the weight bearing portion of the gait cycle
b. Takes place between heel strike and toe off of the foot we are observing during a gait cycle
c. Makes up the majority of the gait cycle
d. ~ 62% of gait cycle
e. Divided into 3 periods
i. Contact period: take up 27% of stance phase
ii. Midstance period: takes up 40% of stance phase
iii. Propulsive period: Take up 33% of stance phase

585. Swing phase – Open Kinetic Chain
a. Occurs during the NWB portion of the gait cycle
b. Takes place between toe off and heel strike of the foot we are observing during gait cycle
c. During this phase the foot pronates then supinates

d. ~38% of the gait cycle
e. Swing phase motions:
i. Pronation: functionally shortens the limb to help the foot clear the ground just after toe off.
ii. Pronation also minimizes the energy used for ground clearance as the NWB limb passes the WB limb.
iii. Supination: stabilizes the osseous structures of the foot preparing for heel strike

586. Post-traumatic stress disorder
a. May develop after a person is exposed to one or more traumatic events, such as sexual assault, warfare, serious injury.
b. Diagnosis: Group of symptoms
i. Disturbing recurring flashbacks
ii. Avoidance or numbing of memories of the event
iii. Hyperarousal

587. Which anesthetic does NOT provide amnesia?
a. Propofol - hypnosis, no analgesia, antiemetic properties,
b. Ketamine – produces disassociative amnesia but not complete amnesia
c. Midazolam – produces amnesia
d. Diazepam – produces amnesia

588. Identify the position of the following x-rays

589. Know the difference between harris beath and calcaneal axial
a. Harris-Beath (Ski-Jump) = Good for posterior and middle STJ
i. Angle unit 45 degrees
ii. Patient stands down on film with knees and ankles flexed 15-20 degrees
iii. First take a scout lateral film and determine the declination angle of the posterior facet of STJ
iv. Then take 3 views; one at the angle determined by the lateral film one 10 degrees above and one 10 degrees below
b. Calcaneal axial
i. Central ray aimed at the posterior aspect of calcaneus
ii. Angle unit at 45 degrees
iii. Examine the calcaneus for fracture, abnormalities in shape, or internal fixation in major tarsal fusions.

590. Person who is going to have foot surgery, who has an MCV Level of 110, Low Hg, what are they deficient in?
a. Folate deficiency (megaloblastic anemia)

591. Which of the following would show the Lowest signal Intensity on T1 MRI?
a. Adipose tissue
b. Cortical Bone
c. Synovial Fluid
d. Venous Blood

592. 20 Year old college athlete who had suffered a previous Jones Fracture, he has been in a short leg cast for 6 weeks, but fracture has not healed, what next:
a. IM Screw fixation
b. IM K wire fixation
c. Another NWB Cast
d. Partial WB Cast

593. Patient has pain on lateral side of the calcaneus, which of the following is the most likely cause?
a. Bifurcate Ligament sprain ***[****Rowe IC, anterior process fx]***
i. It is the structure that most commonly causes the avulsion of the anterior process of the calcaneus
ii. The calcaneocuboid portion of the bifurcate ligament is usually sprained
iii. The bifurcated ligament is composed of:
1. Dorsal calcaneonavicular and calcaneocuboid ligaments
iv. The bifurcate ligament, which originates on the anterior process of the calcaneus and attaches to the the navicular and cuboid is associated with an avulsion fracture of the anterior process of the calcaneus.

594. Which ligament prevents over inversion of the foot the most?
a. Spring Ligament – Plantar calcaneonavicular ligament
i. Always rips on flatfoot
b. Cervical Ligament *[Anterior Talocalcaneal ligament]*
i. Ligament of the tarsal canal. Located laterally in the sinus tarsi, and **resist supination of the STJ**
ii. Most important STJ supinator are the tibialis anterior and posterior
iii. Most important pronators are peroneus longus and brevis

c. Bifurcate Ligament – associated fractures of the anterior process of the calcaneus.

595. Patient fell from a 12-foot height and fractured his calcaneus, you are a first year resident on call, which of the following would be best possible choice?

a. Consult Orthopedics to evaluate for spine trauma

596. Drugs for MRSA

a. Vancomycin (DOC) 1g IV q12h
b. Clindamycin (if allergic to penicillin)
c. Tigecyclin
d. Telavancin
e. Zyvox / Linezolid
f. Synercid
g. Cubicin
h. Daptomycin + Aztreonam
i. Vanco + Fortaz + Flagyl

597. DOC for MRSA PO

a. Bactrim (1 tablet PO BID) /Rifampin 300mg + Minocycline 100mg PO BID
b. Cipro/Rifampin
c. Minocyline
d. Topical – Bactroban

598. How do you prevent methicillin resistant staphylococcus aureus (MRSA)?

a. CONTACT ISOLATION
b. Wash your hands à **use warm water for at least 30 seconds**
c. Clean facets and toilet handles regularly with an antibacterial cleaner
d. Keep cuts clean and covered while they heal
e. Do not share personal items
f. Wipe exercise equipment before and after you use it
g. Wear gloves and gowns at the hospital

599. What are IV alternatives for PCN allergic patients?

a. Clindamycin
b. Vancomycin
c. Levaquin
d. Bactrim

600. What is the DOC for a patient with diabetes and a PCN allergy?

a. Clindamycin

601. What are the signs of hypoglycemia?

a. Nervousness, tachycardia, diaphoresis, nausea, headache, confusion, tremor, seizures, coma

602. What are the signs of hyperglycemia?

a. Polyuria, polydipsia, weight loss

603. What are the only FDA approved drugs for treating diabetic neuropathy?

a. Duloxetine (Cymbalta)
b. Pregabalin (Lyrica)

604. Diabetes

a. HbA1c
  i. Prediabetes = 5.7-6.4%
  ii. Diabetes > 6.5%
b. Fasting
  i. Prediabetes = 100-125mg/dl
  ii. Diabetes >126mg/dl
c. Random glucose
  i. Diabetes > 200mg/dl

605. How does insulin works?

a. Stimulates glycolysis and inhibits gluconeogenesis

606. Diabetes general drugs – Blood glucose and glycemic control

a. Oral agents:
  i. Sulfonylureas: Bind to beta cell receptors stimulating insulin release
    1. Glyburide (Micronase)
    2. Glipizide (Glucotrol)
    3. Glimepiridine (Amaryl)
  ii. Biguanides: Decrease production of glucose in the liver
    1. Metformin (Glucophage)
  iii. Thiazolidinedione: Increase peripheral cellular response to insulin

1. Rosiglitazone (Avandia)
2. Pioglitazone (Actos)

iv. Alpha glucosidase inhibitors: Reduce intestinal carbohydrate absorption
1. Acarbose (Precose)
2. Miglitol (Glyset)

607. Insulins

Rapid acting: Lispro (Humalog), Aspart(Novolog)
Short acting: Regular
Intermediate Acting: NPH, -Lente
Long acting: Glargine (Lantus), Detemir (Levemir)
Combination: 70/30 (NPH/Regular)

608. Diabetic NPO Recommendations
a. Type 2 DM:
i. . the normal dose of long acting if they get any
ii. BG checks q6 hours with short acting agent available for coverage
iii. D5W or D5-1/2 NS at 50-75cc/hr while NPO
b. Type 1 DM:
i. Strongly consider an insulin drip
ii. .-2/3 dose of long acting agent
iii. BG checks q6 hours with short acting
iv. D5W or D5-1/2NS at 75-100cc while NPO

609. What do you do for diabetic patient pre-op on oral diabetic drug?
a. So stop oral diabetic drug and give 1/2 insulin dose.

610. Left sided cardiac heart failure
a. Left sided S3/S4 gallop
b. Bilateral basilar rales
c. Pleural effusions
d. Pulmonary edema
e. Orthopnea
f. Paroxysmal nocturnal dyspnea

611. Right sided cardiac heart failure
a. Right-sided S3/S4 gallop
b. JVD
c. Hepatojugular reflex
d. Peripheral edema
e. Hepatomegaly, ascites

612. Congestive heart failure with pedal edema
a. Right ventricular heart failure => pedal edema
b. Left ventricular heart failure => pulmonary edema (tx w/ diuretics) => dyspnea

613. Characterized by decreased lung function with airflow obstruction. Generally secondary to chronic bronchitis or emphysema.
a. COPD – Chronic Obstructive Pulmonary Disease
i. Chronic Bronchitis: Productive cough for >3 months per year for 2 consecutive years.
1. "Blue bloater" à cyanosis with mild dyspnea; productive cough
2. Patients are often overweight with peripheral edema, rhonchi, and early signs of hypercarbia/hypoxia.
3. Look for the classic barrel chest, use of accessory chest muscles, JVD, end-expiratory wheezing, and muffled breathe sounds.
ii. Emphysema: Terminal airway destruction and dilation that be secondary to smoking (centrilobular) or to alpha 1 antitrypsin deficiency (panlobular)
1. "Pink puffer" à Dyspnea, pursed lips, minimal cough, decrease breath sounds, late hypercarbia/hypoxia.
2. Patients often have a thin wasted appearance and have few reactive episodes between exacerbations.

614. Chronic obstructive pulmonary disease (COPD) treatment and dyspnea
a. Corticosteroids (salmeterol/fluticasone)

b. Oxygen
c. Prevention: cigarette smoking cessation, pneumococcal and influenza vaccines
d. Dilators (beta agonist, anticholinergic) - albuterol

615. What is dyspnea?
a. Shortness of breathe; associated with diseases in the respiratory and cardiovascular system.
b. Normally our body regulates our breathing via medulla oblongata in the brainstem.
c. Dyspnea can be experiences at rest or during activity.
d. Usually due to an underlying condition.

616. What is the triad of pulmonary embolism?
a. Dyspnea
b. Chest pain
c. Hemoptysis (although tachycardia is more common)

617. What is Virchow triad?
a. Venous stasis: tourniquet, immobilization
b. Endothelial wall damage/abnormality: surgical manipulation, trauma, smoking
c. Hypercoagulability: birth control, coagulopathy, history of DVT

618. Fungal drug griseolfulvin what test do you do to test to follow up?
a. CBC and fungal test before the start of the medicine

619. What is the blood supply to the talus?
a. Dorsalis pedis: supplies the superior aspect of the head and neck
i. Anastomoses with the peroneal and perforating peroneal arteries
ii. Artery to the sinus tarsi: supplies the lateral aspect of the talar body
1. Forms an anastomotic sling with the artery of the tarsal canal
b. Posterior tibial artery
i. Deltoid branch: medial aspect of the talar body
ii. Artery of the canalis tarsi: majority of the talar body
1. Forms an anastomotic sling with the artery of the tarsal sinus
2. Also sends branches to the posterior process
c. Peroneal/Perforating peroneal artery: supplies posterior and lateral aspects of the talar body
i. Anastomoses with the dorsalis pedis artery branches

620. What is the nerve supply to the first digit?
a. Saphenous nerve
b. MDCN
c. Deep peroneal nerve
d. Medial plantar

621. What is the ideal position for ankle arthrodesis?
a. Ankle neutral (no DF or PF)
b. 5 degrees of RF valgus
c. External rotation equal to opposite limb
d. Talus posterior to tibia and 10 degrees of external rotation

622. Ankle Arthrodesis indications
a. Patient with severe pain and deformity
b. DJD, RA, talar collapse, failed ankle joint prostheses, infection of the ankle joint, dropfoot, invasive tumors, and congenital deformities.

623. Fusion of the 1st metatarsal cuneiform joint – Lapidus type
a. Distal 1st meta has to be plantarflexed and adducted

624. Lapidus type (fusion of the 1st metatarsal-cuneiform joint)
a. The joint is arthrodial with its own synovial membrane
b. The medial cuneiform distal articular surface is reniform in shape with a convex medial border and concave lateral border
c. The surface is enlongated in the vertical direction with an inferior and medial inclination
d. Dorsal and plantar 1st metatarsal cuneiform ligaments are present
e. There are no interosseous ligaments between the base of metatarsal 1 and 2
f. There is a strong interosseous ligaments between the 1st and 2nd cuneiform and between the 1st and 2nd cuneiform and 2nd metatarsal
g. Tibialis anterior tendon inserts at the proximal junction of the medial and inferior surfaces of the 1st metatarsal
h. Peroneus longus tendon inserts at the proximal junction of the lateral and inferior surfaces of the 1st metatarsal
i. Indications for a lapidus:
i. Extreme hypermobility associated with HAV

ii. Correction of sagittal plane deformity
iii. Correction of severe metatarsus primus adductus associated with a hypermobile or structurally medially deviated MTC joint
iv. Repair fracture or dislocation
v. Hypermobile flatfoot with medial column sag

j. Surgical technique:

i. Via a dorsal longitudinal incision medial to the EHL tendon, with capsular incision dorsal linear or transverse
ii. Articular cartilage is resected from the joint surfaces
iii. Metatarsal is then adducted and slightly plantarflexed and then fixated with compressions screw, staple, or k-wires
iv. A BK NWB cast is applied until radiographic signs of fusion and stability are seen.

625. Which is the best view to diagnose talocalcaneal (middle facet) coalition?

a. Lateral view

i. Halo sign: absence or diminished visualization of the middle facet with enhacement of the sustentaculum tali
ii. Loss of STJ clarity
iii. TN beaking
iv. Flattening of the lateral process of the talus

626. What is the best view to diagnose calcaneonavicular coalition?

a. MO view

i. "Comma sign" – protrusion of calcaneus toward navicular
ii. "Anteater nose sign

627. Most sensitive cells for x-ray

a. Lymphocyte & blood forming cells => sperm & GI cells => Neuromuscular cells

628. What is the most sensitive time for x-rays during pregnancy?

a. First trimester

629. What is the best view for os peroneum?

a. MO view

630. ABC's of emergency= first check for responsiveness

a. Airway
b. Breathing
c. Circulation with hemorrhage control
d. Disability – assess neurologic status
e. Exposure of patient and environmental control

631. Test for weak hip abductors. Patient stands on affected limb, pelvis drops to opposite side. Gluteus medius/minimus weakness of standing side

a. Trendelenberg test

632. Determines if there is a plantar plate tear or rupture. While stabilizing the metatarsal, a dorsal translocation of the proximal phalanx greater than 2mm is suggestive of rupture

a. Lachman test – is diagnostic of anterior cruciate ligament stability

i. Vertical push up test = for predislocation syndrome

633. What are two tests that evaluate the anterior cruciate ligament?

a. Lachman test
b. Lateral pivot shift (test of Macintosh)

i. The patient lies supine with hip flexed about 30 degrees and slightly medially rotated. The knee is extended. The examiner supports the patient's leg, with one hand at the foot and the other at the knee, the thumb behind the fibular head
ii. The hand at the foot rotates the tibia internally, while the other hand exerts a mild valgus stress at the knee. The examiner flexes the knee gradually, maintaining the internal rotation and valgus stress.
iii. In anterolateral rotatory instability of the lateral tibial condyle will first subluxate anteriorly and at ~ 30 degrees of flexion

634. Reroute of the anterior tibial tendon through a keyhole in the navicular without detaching from its insertion. Posterior tibial is advanced under the navicular to support the medial arch

a. Young's Procedure.

635. Impingement of the sciatic nerve within the spinal canal causing radicular pain(pain follows the distribution of the nerve involved).

a. Radiculopathy

636. A centrally mediate chronic pain disorder characterized by soft tissue and axial skeletal pain in the absence of joint pain. Inflammation is notably absent. Most common in women 30-50 years of age, associated with depression, anxiety, sleep disorders, IBS, and cognitive disorders

a. Fibromyalgia

i. Diagnosis: multiple (> 11 of 18), diffuse tender points or non-fibromyalgia-associated tender points is known as myofascial pain syndrome

ii. Treatments: Antidepressants, gabapentin, pregabalin, muscle relaxants, and physical therapies, avoid narcotics

637. A malignant tumor of epithelial keratinocytes; high incidence of metastasis; most frequently associated with chronic venous ulcer.

a. Squamous cell carcinoma

i. Causes: Exogenous carcinogens (sunlight exposure, ingestion of arsenic, radiation, smoking)

ii. More common in fair skinned persons; usually occur in people over 55

iii. Males are more affected than females, however the leg of females predominates

iv. Occur in sun-exposed areas most often on face or back of the hands.

v. On the foot often arise in previous damaged skin especially scars

vi. Presentation: Superficial discrete hard lesions resembling a verruca arise from an indurated elevated base, dull red color with telangiectasias

1. Begins as small erythematous hard scaly plaques and a small red nodule which may ulcerate

vii. Treatment: excision, curettage, cautery, or cryotherpay and in severe cases radiation therapy

638. Calculate the dose of lidocaine using 15 cc of 2% lido

a. 300 mg

i. 1% = 10 mg/cc; 15cc x 20 = 300 mg

639. What time in childhood do legs become straight?

a. 2-3 yrs

640. What time does a child walk?

a. 14 months

641. Incomplete fracture in which cortex on only one side is disrupted; seen in children due to their soft bones

a. Greenstick fracture

642. If a child is being abuse, what should one do?

a. Call social service

643. Which ligaments are stretched more in inversion?

a. ATFL

644. With inversion ankle sprain and damage to ATFL, what test will be positive?

a. Anterior drawer sign

645. Most common organism that causes OM after puncture wound

a. Pseudomonas

646. Golden period for open fractures

a. 6-8 hrs

647. Gustillo and Anderson classification

a. Type I: Wound < 1 cm long; little soft tissue damage; no signs of crushing injury; simple transverse or short oblique fracture

b. Type II: Wound > 1cm long; no extensive soft tissue damage; slight or moderate crushing injury; moderate comminution

c. Type III: Wound > 5c long with extensive soft tissue damage; high degree of comminution; associated with high velocity trauma

i. Type IIIA: soft tissue coverage of bone is adequate; severely comminuted fracture from high energy trauma

ii. Type IIIB: extensive injury to or loss of soft tissue requiring local or free flap for coverage after adequate debridement; associated with periosteal stripping and exposure of bone, massive contamination and fracture comminution

iii. Type IIIC: any open fracture with an arterial injury that must be repaired

648. Talar Neck Fractures – Hawkin's Classification

a. Type I: non-displaced vertical fracture of the talar neck, body of the talus retains its normal position in the STJ and ankle join (**one** source of blood supply are disrupted).

b. Type II: vertical fracture of talar neck with STJ subluxation or dislocation (**Two** sources of blood supply are disrupted).

c. Type III: vertical fracture of the talar neck with STJ and ankle joint dislocation (**all three** sources of blood supply are disrupted).

d. Type IV: vertical fracture of the talar neck with STJ, ankle and talonavicular joint dislocation (**all three** sources of blood supply are disrupted).

649. Pes Planus (Flatfeet)

a. Flexible

i. (+) Hubscher Maneuver
ii. (+) Resupination test
iii. Not painful
iv. Longitudinal arch present during WB

b. Rigid
i. (-) Hubscher maneuver
ii. (-) Resupination test
iii. Painful
iv. Causes: coalition, vertical talus

c. Higher incidence in blacks; most are asymptomatic
d. Normal Meary's angle = 0 (Lateral x-ray)
i. Increases with flatfoot is 1-15; >15 severe
e. Normal calcaneal inclination angle =20-25 (lateral x-ray)
i. Decreases < 15 with flatfoot.
f. Normal talocalcaneal angle = <25 (AP)
i. >25 with flatfoot
g. Normal talonavicular articulation = < 50%
i. 60-70% with flatfoot

650. Transverse plane deformity (C-shaped adduction) in which the mets medially deviates with the apex of the deformity at the Lisfranc articulation. Commonly associated with tibial and femoral torsion, congenital hip dysplasia, clubfoot and a windswept deformity

a. Metatarsus adductus
i. Incidence: 1/1000 F>M 4:3 or 3rd child, 10:1 met adductus to clubfoot
ii. Causes: IUP, tight ABH, absent or hypoplastic medial cuneiform, abnormal insertion of AT, sitting/sleeping position
iii. Classification:
1. Flexible: deformity is reducible with manual manipulation < 6 months
2. Rigid: no manually reducible, casting only sometimes effective >2 years
3. Dynamic: only present upon WB due to tight ABH
iv. Clinical features: adducted forefoot, convex lateral border and concave medially
1. Cigar sign= wide 1st interspace, prominent styloid process, tight or spastic ABH, RF varus.
v. Clinical diagnosis = Lichtblau's test (the ABH is palpated just proximal to the met head; tightness or spasticity can be detected

	Normal Degrees	**Met Adductus**
MA	Birth (15-35); 1yo (20) 4yo (15)	>21 is considered pathologic
Engle's angle	24	>24
Simon's angle	Talus 1st met bisector 0-20	Negative
TCA	20-25	Increases
Cuboid sign	Normal cuboid position	Medially displaced cuboid

651. HAV surgery if IM of 18 degrees what procedure *[Below are just examples of some procedures you must know regarding bunion surgery. Many of these don't address an IM of 18 degrees. They're just shown for example's sake]*

a. Austin (head procedure)
b. Lapidus (arthrodesis)
c. Hohmann (neck procedure)
d. Mitchell (neck procedure)
e. Reveridin –Laird (head procedure)
f. Reveridin –Todd (head procedure)
g. Kelish (shaft procedure) – modified austin
h. Scarf (shaft procedure)
i. Mau (shaft procedure)
j. Ludloff (shaft procedure)

652. Presents as soft, movable and fluctuant mass on dorsal foot

a. Lipoma
i. Benign usually painless tumor derived from fat cells
ii. Presents as soft (doughy), freely movable, lobulated mass that usually arises superficially in the subcutaneous tissue
iii. Rarely found on the foot.
iv. Has been shown associated with Gardner's syndrome and neurofibromatosis

v. A fat containing lesion like a lipoma has a short T1(hyperintense) signal and a long T2 signal
vi. Hibernoma: rate fat tumor composed of brown fat

b. [Interosseous lipoma in calcaneus= can cause pathological fracture]

653. What are the boundaries of the popliteal fossa?

a. Semimembranosus muscle (superior and medial)
b. Short head of the biceps femoris (superior and lateral)
c. Media head of the gastrocnemius muscle (inferior and medial)
d. Lateral head of the gastrocnemius muscle (inferior and lateral)
e. Roof: Skin, superficial fascia
f. Floor: popliteal surface of the femur, the capsule of the knee joint and the oblique popliteal ligament, and strong fascia covering the popliteus muscle

654. During a neuroma surgery on third digit what structures likely to be damaged?

a. Deep transverse metatarsal ligament

655. What is the best method for radio?

a. Distance

656. Who controls medical records?

a. HIPPA

657. Benign, osteolytic lesion with central nidus (<1cm) that may have calcifications. Painful classically associated with relief of pain by aspirin (tumor produces PGs and night pain). Generally affects long bones (calcaneus and talus); affects young adults

a. Osteoid osteoma***

658. Gait cycle

a. Hypermobile first ray: rearfoot varus
b. Stance phase: 60-62 %
c. Forefoot load is the beginning of midstance
d. At heel off toes bears weight

659. Bier block what do you use?

a. Good: lidocaine and prilocaine
b. Bad: Marcaine

[Marcaine bad because you when doing a bier block you put the local directly in veins while the tourniquet is up, and it must remain up until the local is depleted enough to be safe to turn it down (takes 30-40 min before it is safe to deflate). marcaine has a longer half life, and amount of tourniquet time required for the Marcaine levels to drop to a safe amount is too long]

660. A woman presents to ER suffering from sudden blindness on right eye, weakness on the left side of body, what does she have:

a. CVA accident
i. Stroke
ii. >24 duration
iii. Irreversible
iv. Can be Ischemic or Hemorrhagic
v. Signs and Symptoms: (Dependent of area of brain affected)
vi. Aphasia (difficulty speaking)
vii. Gaze
viii. Contralateral paralysis and sensory loss in face and arms
ix. Hemianopia (usually affects both)

b. TIA
i. Baby Stroke: Brief blockage of blood supply to the brain
ii. Sudden and Brief: <24hr duration (usually 1hr)
iii. Full Recovery
iv. Associated with *"Amaurosis Fugax"*
v. Temporary loss of vision in 1 eye
vi. Signs and Symptoms:
vii. (Carotid Circulation)
viii. Unilateral loss of Vision
ix. Contralateral weakness of arm, leg or face
x. (Vertebrobasiliar Circulation)
xi. B/l loss of Vision
xii. N/V/Vertigo and Loss of Consciousness

c. Hypoglycemia
i. Cause: Low blood sugar (<70mg/dl)

ii. Signs and Symptoms: Weakness, hunger, sweating, irritability, faintness, moist skin, loss of consciousness
iii. Drugs at can cause hypoglycemia: Warfarin, Aspirin, Allopurinol, Probenecid

661. **Medial cuneiform fracture, which of the following are best views to evaluate**

a. Medial Oblique:
i. Center of beam at base of 4th met/Cuboid
ii. Angle 0 if foot is rotated, 45deg if foot is rectus
iii. Good visualization of Lateral cuneiform, Cuboid, Metatarsals 3-5

b. Lateral Oblique:
i. Center of beam at base of 1st metatarsal-cuneiform/Navicular
ii. Angle 0 if foot is rotated, 45deg if foot is rectus
iii. Good visualization of Medial column, Tibial Sesamoids, 1st Metatarsal cuneiform

c. Anterior Posterior:
i. Center of beam at Navicular
ii. Angle 15deg
iii. Calcaneal axial
iv. Center of beam at Posterior Calcaneus
v. Angle 45deg
vi. Good visualization for Calcaneal fx

662. **Patient scheduled for foot surgery, which med would you want them to keep taking?**

a. **10 mg of prednisone Q.D**
b. Continue…
i. ACE/ARB
ii. Know Scaling Scale (<150=0 units then + 2units for every 50mg/dl, so 151-200=2units)
iii. Cardiac Meds (Nitrates, Beta Blockers)
iv. Asthma Meds
c. Discontinue….
i. Anticoagulants
1. NSAIDS= 7-10d
2. ASA= 10-14d
3. Heparin = 2-6hrs
ii. Warfarin /Plavix = 3-5d
iii. Hypoglycemics
iv. Herbal Meds= 2 weeks
v. HCTZ/ furosemide (diuretics)

663. **Person walking up the staircase and suffers a lateral ankle sprain, foot is dorsiflexed and rearfoot gets adducted, which ligament is injured?**

a. Anterior Talofibular
i. Inverted and Plantarflexed
b. **Calcaneofibular**
i. **Inverted and Dorsiflexed**
ii. **Resists Adduction forces**
c. Posterior Talofibular
i. Rarely Ruptures
ii. Reinforces Ankle Joint
d. Interosseous membrane
i. Made up of AITFL, PITFL, Interosseous Tibiofibular ligament.
ii. Assess by…
1. Medial Clear Space: Normal <4mm
2. Tib-Fib Overlap: Normal >10mm on AP

664. **Athlete with a cavus foot type, who has never suffered from an ankle sprain presents to your office, what is the most appropriate treatment**

a. Brostrum Gould procedure
i. Delayed Primary Ligament Repair
ii. For Chronic Ankle Sprains
b. **Put them in a short leg cast for 2 weeks and PT after to strengthen ligament**
i. **Acute Ankle Sprain.**
c. Peroneal retinaculum augmentation repair
i. Subluxed or dislocated Peroneal Tendons

665. **Which of the following is a Risk factor for COPD?**

a. Firefighter
b. Smoker
c. α Trypsin deficiency
    i. Causes of COPD
        1. Tobacco exposure
        2. Occupational exposure to toxins (dust, noxious gas, vapors, fuses, cadmium, coal, silica, plastic, leather, rubber, textiles)
        3. Atomsphere pollution
        4. α1 antitrypsin deficiency (<1%)

666. **Young patient who had a sudden episode of syncope, is suffering from sounded like cardiac symptoms, what would have been their symptoms?**
    a. dyspnea

667. **Which of the following procedure offers the most Transverse plane correction?**
    a. Evans
        i. Opening wedge osteotomy of the calcaneus 1.5cm proximal to the calcaneocuboid joint
        ii. Lengthens the lateral column
        iii. Other Transverse Plane Correction…
    b. Kidner [saggital plane correction]: Removal of prominent tuberosity, transposition Posterior Tibial Tendon plantarly into navicular
    c. Silver
        i. Lateral Opening Wedge Calcaneal Osteotomy
        ii. Frontal Plane Correction
    d. Dwyer
        i. Medial Closing Wedge Calcaneal Osteotomy
        ii. Frontal Plane Correction
    e. Cotton
        i. Opening dorsal wedge of the medial cuneiform
        ii. Sagittal Plane Correction
            1. Lowman
            2. Miller
            3. Hoke
            4. Young
            5. Lapidus
            6. TAL/Gastroc recession

668. **Which of the following would indicate that a transverse plane deformity exists?**
    a. Too many toes sign
    b. Frontal: Foot looks Flat
    c. Sagittal: Foot looks supinated

Transverse Plane	Frontal Plane	Saggital Plane
increase TC angle (Kite's) on AP	increase Metatarsal superimposition on AP	Increase Talar Declination Angle
Increase Cuboid abduction angle	Decrease 1st met declination angle (Hibbs)	Increase Met-Navicular breach
Decrease FF adduction	Decrease Height of Sustentaculum Tali	Increase TC on lateral view
	Rearfoot eversion	Decrease CIA

669. **Pt who has a cavovarus foot type, you perform a Coleman block and the calcaneus varus corrects itself, best procedure?**
    a. DFWO
        i. Indicates a Anterior Cavus and Flexible Forefoot
    b. Dwyer
        i. Lateral Closing Wedge or Medial Opening Wedge
        ii. Indicated if the Varus was NOT corrected
    c. Silver
        i. For Pes Planus/ Lateral Opening Wedge Calcaneal Osteotomy

670. **Pt with a cavovarus foot type, upon performing the Coleman block test the calcaneus does not reduce, which of the following is the best procedure?**
    a. Lateral closing wedge (Dwyer)
        i. For a Rigid, Posterior Cavus deformity
    b. DFWO
        i. Flexible Anterior Cavus deformity

671. **Cavus**
- a. Coleman Block to test Rearfoot
  - i. (+) Flexible = Check MPJ
  - ii. (-) Rigid = DWYER
- b. MPJ
  - i. Flexible = Flexible Cavus (No DFWO)
  - ii. Rigid = Capsular Release and check 1st Ray
- c. 1st Ray
  - i. Locked = 1st MPJ release
  - ii. Rigid = DFWO

672. **Pes Planus Flexible Deformity**
- a. **Soft Tissue**
  - i. Plantar Fascial Release- Steindler Stripping
    1. Plantar fascia
    2. Abductor hallucis
    3. Flexor digitorum brevis
    4. Abductor digiti quinti
    5. Long plantar ligament is released
- b. **Tendon Transfers**
  - i. Jones Tenosuspension
    1. Reroute EHL to key hole in 1st met to help with DF
  - ii. Heyman
    1. Jones of 5 long extensor tendons
  - iii. Hibbs
    1. Tenodesis EDL to 3rd cuneiform
  - iv. STATT (Split Tibialis Anterior Tendon Transfer) à 3 vertical incisions
    1. Transfer medial aspect of tendon to peroneal sheath.
       a. Tib Anterior attaches to medial side of 1st met head
       b. Peroneus tertius attaches to base of 4th and 5th met
  - v. Peroneus Longus Tendon Transfer
    1. Detach near cuboid and bring to dorsum of foot
  - vi. Tibialis Posterior Tendon Transfer à 4 incisions
    1. OUT OF PHASE
    2. Transfer to dorsum of midfoot
  - vii. Peroneal Anastomosis
    1. Tie P. brevis and P. longus together

673. **Pes Cavus Rigid Deformity**
- a. Osseous Procedures
  - i. Metatarsal Osteotomies
    1. DFWO
       a. Dorsiflexory Wedge Osteotomy
    2. Jahss
       a. Tarsometatarsal wedge osteotomy
  - ii. Midtarsal Osteotomies
    1. Cole
       a. Dorsal tarsal wedge
    2. Japas
       a. V osteotomy
  - iii. McElvenny-Caldwell (Fusion)
    1. 1st Metatarsal-cuneiform arthrodesis
  - iv. Pan metatarsal osteotomies
  - v. Tarsal
    1. DuVries (Fusion)
       a. Dorsiflexory Arthrodesis through MTJ
  - vi. Calcaneal Osteotomies
    1. Dwyer
       a. Lateral closing wedge OR medial opening wedge
    2. Samilson
       a. Dorsiflexory through and through

674. **Burn victim with 25% burns on his body, weighs 70kg, how much fluid would he need?**
- **a. Baxters Formula: 4 x TBSA% x wgt(kg) = _____ml**

b. Give Lactated Ringer, give . dose within 1st 8h and . dose within 16h

675. Child who had a sore throat and now has a lot of joint pain and other issues, what meds would have avoided his issues?

a. Antibiotics

i. Pt has Rheumatic fever: Inflammatory disease that can develop as inadequate treatment of strep or scarlet fever

b. Corticosteroid

i. Can now give to decrease the inflammation

c. Anticonvulsants

i. Can now give to prevent jerky movements of the nervous system

676. **Person who has lichenified plaques bilaterally and who has been scratching their ankles especially around the show tongue area, what is the best treatment?**

a. Change of shoe Gear

i. Underlying cause

b. Topical steroids

i. Helps with pruritis

c. Antibiotics

677. **When performing a Jones Procedure which of the following adjunct procedures would be beneficial?**

a. MPJ Fusion

b. PIPJ Fusion

i. Does not exist in the Hallux

c. DIPJ Fusion

i. Does not exist in the Hallux

d. IPJ Fusion

i. Prevent overpowering of the EHL and hammering

678. Juvenile Hallux abductovalgus patient with a high IM and hypermobile first Ray, which of the following procedures would be appropriate.

a. First Met/Medial cuneiform fusion (Lapidus)

i. High IM

ii. Contraindicated if there is a growth plate (fuses at 17-20yrs)

b. Head procedure

i. Low IM

c. Base procedure

i. High IM

679. For a Base wedge procedure, which hinge axis orientation would plantarflex the metatarsal

a. Parallel to WB surface

i. Close medial or laterally

b. Perpendicular to WB surface

i. Close dorsal or plantarly

c. Dorsomedial Hinge axis

i. Plantarflex

d. Plantarlateral Hinge axis

i. Dorsiflex

680. **If you double the distance what is the drop off in radiation, but it was worded with numbers**

a. **Inversion square law**

i. **Intensity = 1/(distance)$_2$**

681. **Both Pagets disease and Rickets in children will show which of the following features.**

a. **Bowing of the long bones**

i. Pagets

1. Focal disorder of bone metabolism, increased bone remodeling
2. Boney enlargements, Enlarged Skull, Pathological fx**, Bowing of long bones**

ii. Rickets

1. Vitamin D deficiency in Children (Osteomalacia in adults)
2. Normal ossification disturbances, Trumpeting of the Metaphysis and Epiphysis. **Bowing of legs**

682. **Pt with a cavovarus foot, who has suffered from a lateral ankle sprain, Anterior drawer sign is positive but talar tilt is negative, which procedure would you use?**

a. Anterior Drawer (Evaluates the ATFL, not CF)

i. >2cm displacement verse contralateral limb

b. Talar Tilt (+ indicated rupture of ATFL & CF)

i. >5 deg verse contralateral side

c. Bostrom
    i. Delayed Primary Ligament Repair
    ii. Repair of ATFL
d. Bostrom Gould
    i. Delayed Primary Ligament Repair
    ii. Reinforcement of repair with Extensor Retinaculum
e. Peroneal retinaculum augmentation
    i. Subluxed or Dislocated Peroneal Tendons
    ii. Jones: Stabilize the Peroneal tendons by reconstructing the retinacular ligament with a flap of Achilles tendon

ATFL (Most common)	Intracapsular	Resists Anterior displacement of Talus Inversion Sprain with foot Plantarflexed
CFL	Extracapsular	Resists Inversion of Talus Lies DEEP to Peroneal Tendons Inversion Sprain with foot Dorsiflexed Rupture of Ligament many also tear Peroneal tendon Sheath
PTFL (Strongest)	Intracapsular	Resists Posterior displacement of Talus

683. Types of Lateral Ankle Stabilizations
a. Delayed Primary Ligament Repair (no rupture, but stretched)
    i. Brostrom/Brostrum Gould
b. ATFL Replacement (1 lig)
    i. Watson-Jones: utilize the Peroneus Brevis, suturing to Peroneus Longus
    ii. Lee: utilize the Peroneus Brevis, suturing to Peroneus Longus
    iii. Suppen: utilize the Peroneus Brevis
c. ATFL and CF Replacement (2 lig)
    i. Christmas-Snook: utilize the Split Peroneus Brevis
    ii. Elmslie: utilize Fascia Lata
    iii. Winfield: utilize the Peroneus Brevis
    iv. Split Peroneus Brevis Lateral Ankle Stabilization
d. ATFL, CF and PTFL Replacement (3lig)
    i. Spotoff: utilize Fascia Lata
    ii. Rosendahl-Jensen: utilize Fascia Lata
e. Repair Without Following Anatomic Orientation (Extra-anatomic)
    i. Evans: utilize the Peroneus Brevis
    ii. Larsen: utilize the Peroneus Brevis
    iii. Nilsonne: utilize the Peroneus Brevis

684. **Avulsion fracture of the Plantar aspect of the First Met, which of the following is most likely the cause.**
a. Tibialis Posterior
    i. Inserts plantarly on the Navicular (major insertion site), Medial and Intermediate cuneiform, and base of 2-4 metatarsal
    ii. Does not insert on the 1st & 5th Metatarsal and Talus
b. **Peroneus Longus**
    i. **Inserts on the plantar surface of the 1st cuneiform and base of 1st metatarsal**
c. Peroneus Brevis
    i. Inserts on the styloid process of the 5th metatarsal
d. EHL
    i. Inserts on the dorsal aspect of the distal phalanx

685. **Patient who has a stable Charcot foot deformity and has a stable ulcer but has to work and be on his feet, best option for him?**
a. **CROW walker**

686. **X-Ray of an 8 year with metadductus would show which of the following.**
a. **Increased Engles Angle (>24)**
b. **Increased Cuboid Abduction angle**

687. **Which of the following conditions will exhibit Raynaud's phenomenon?**
a. **Scleroderma (systemic sclerosis) – Connective tissue disease**
b. **SLE**
c. **Sjogren's syndrome**
d. **Polymyositis and Dermatomyositis**

e. **Mixed connective tissue disease**
f. **Rheumatoid arthritis**

688. **Which of the following would NOT be most likely seen in an Acute Tendon Rupture?**
a. **Flexion contraction of the digits**
i. Clinical symptoms of Achilles tendon rupture
1. Positive Thompson test – good for testing total rupture
2. The patient is prone with his/her foot hanging off the table. The calf is squeezed and the foot is watched for its response.
3. Absence of plantarflexion is a positive test and indicated severe rupture of the tendon. If plantarflexion occurs, this is negative test and indicates integrity of the tendon.
ii. Palpable Gap and dell – good for testing
iii. Weakness (plantarflexion) of loss of function
iv. Pain with history of "pop"
v. Inability to perform single leg rise
vi. Increased ankle dorsiflexion

689. **Patient who comes in with a Red swollen calf muscle, what test would you order for them?**
a. **Diagnostic Ultrasound to rule out DVT**

690. **Patient who is suffering from CHF, which of the following test would be most valuable?**
a. **BNP**

691. **Patient who is hospitalized with CHF, Which of the following would NOT help them?**
a. **Reducing IV fluids (it's a good thing)**

692. **Patient who has suffered a spiral fracture of the fibula, X-Ray shows a gap between medial malleolus and talus, diastasis exists, which of the following ligaments is damaged?**
a. ATF – Anterior talofibular ligament (lateral ligament)
b. CF – Calcaneofibular ligament (lateral ligament)
c. **Deltoid – medial ligament**
i. **Superficial Deltoid**
1. Superficial Talotibial ligament
2. Naviculotibial ligament
3. Tibiocalcaneal ligament
ii. Deep deltoid
1. Deep posterior ligament
2. Anterior talotibial ligament
d. PTFL – Posterior talofibular ligament (lateral ligament)
e. Syndesmotic ligaments
i. AITFL – anterior inferior transverse tibiofibular ligament
ii. PITFL – posterior inferior transverse tibiofibular ligament

693. Niacin deficiency would have what effect?
a. Skin Flushing (rash), paresthesias, pruritis GI upset, increase LFTs
i. Can be prevented with ASA

694. Person who comes in with large red papular lesion on the dorsum of the foot, which has been enlarging, doubled in size. What could it be?
a. Cellulitis
i. An acute, severe, rapidly spreading skin infection (more specifically an infection of the connective tissue just beneath the skin)
ii. Cause:
1. Staph or strep (most common pathogen are group A streptococcus pyogenes and S. aureus.
2. Anything that breaks the skin (diabetes, surgical wound, ulcers, burns, ingrown)

695. Your patient who was on oral Antibiotic Tx, Type II diabetic who comes in with a ulcer on plantar aspect of the foot, the foot is swollen and inflamed w/ crepitus… what is the best plan of action?
a. Admit to hospital and schedule for I&d next
b. Admit to hospital w/ IV Antibiotics only
c. Switch oral AB and send them home
d. Immediately schedule for I & D

696. What is an indication for a Mortons extension?
a. Hallux rigidus

697. If the metatarsal is dorsiflexed during surgery, what activity of the proximal phalynx would be affected during gait?
a. Dorsiflexion

698. You are performing a lag screw technique with a 2.7mm Screw and you lose purchase, you decide to switch to a 3.5mm screw, which of the following would you have to do?

a. Underdrill 2.5

i. The underdrill on 2.7 is 2.0

699. A low STJ axis will give you more motion in what plane?

a. Transverse

b. Frontal

c. Sagittal

700. When a patient is experiencing angina, which of the following diagnostic tests would be of LEAST value.

a. EKG

b. Echocardiogram

c. Chest X-Ray

d. Blood Test

701. Young child who is involved in Karate, has pain in hip while ambulating, pain with hip movement, most likely diagnosis?

a. Slipped Capital femoral Epiphysis

i. Is a separation of the ball of the hip joint from the thigh bone (femur) at the upper growing end of the bone.

ii. More common in children that are 11-15, obese and growing rapidly

iii. The patient is usually larger and male; holds leg in internal rotation; in gait patient lurches over the involved hip.

b. Legg calve perthes

i. A true AVN of the capital fragment of the femoral epiphysis in children.

ii. Males are more commonly affected than females

iii. 3-12 years is the average age. Prognosis worsens with later ages. 1 in 10 is bilateral

iv. Clinically the patient has a limp and a vague pain in the groin that may extend to the knee.

v. Pain is exacerbated with activity. There is often muscle atrophy in the thigh and a history of trauma in the affected individual.

702. Talar neck fracture with complete dislocation, best method treatment

a. Closed reduce and cast

b. Fuse STJ and ankle

c. Screw reduction

703. X-Ray of an 8 year old, which of the following statements would be true regarding ossification centers?

a. All the metatarsal centers are visible at head at birth.

b. The medial cuneiform is visible before the lateral and navicular**.**

i. The first to ossify after birth is the lateral cuneiform

c. The navicular ossifies primarily thru tuberosity.

i. Last tarsal bone to ossify

704. In an x-ray of a supinated foot, which of the following would you expect to be increased?

a. Talonavicular articulation

705. Patient most often allergic to what component of SS Plate

a. Nickel

706. Best option to treat a Flexible Flatfoot with short Achilles tendon?

a. Surgery

i. Arthrodesis, Evans, Kidner, Lowman, Cotton, Hoke, Miller, Young, Chambers, Baker, Selakovich

ii. Gastrocnemius recession

b. Orthotics – not an indication because the short Achilles tendon will prevent recreation of the arch and instead cause increase pressure under the talar head.

i. Kids with flexible flatfoot use heel cup whose margins have been increased to 25mm. This keeps the heel in a more vertical
position.

ii. Adding a medial flare of about 1/8" on the rearfoot post will help eliminate some of the excess pronation

707. **Which of the following instruments is the best choice for a plantar plate release?**

a. **Mcglamary elevator**

i. Plantar plate – supports the weight of the body and restricts dorsiflexion

708. **Pt who has a Cavovarus foot, suffered an ankle sprain, upon examination you notice a positive anterior drawer sign but negative talar tilt, which ligament is injured?**

a. **Anterior Talofibular ligament**

709. **Patient who had an HAV surgery one year ago is still complaining of pain and numbness along medial aspect of the hallux, which nerve is most likely affected**

a. **MDCN**

710. **Which of the Following Non-unions would most benefit from immobilization?**
    a. Atrophic Nonunion – avascular
        i. Torsion wedge, comminuted, defect, atrophic
        ii. Tx: Apply bone graft plus mechanical stability.
    b. **Hypertrophic Nonunion – hypervascular (90%)**
        i. **Results from excessive motion, so eliminating movement will allow complete bone healing**
        ii. Tx: Correct internal stability with splint or ORIF.
711. **Which of the following patterns of Bone destruction would indicate a nonaggressive lesion?**
    a. Geographic
        i. Well-defined, short zone of transition à benign or low grade malignancy
    b. Permeative – poorly defined, wide zone of transition à malignant
    c. Moth eaten – more aggressive, intermediate zone of transition à benign or malignant
712. **What does the term "Res epsa Loquitor" Mean?**
    a. **Something, which speaks for itself.**
713. **What could be the result of Round Metatarsal Head**
    a. **Hallux Varus**
714. **Pagets disease and Rickets share which of the following features:**
    a. **Tibial Bowing**
715. **Which of the following are universal precautions?**
    a. Use Barrier Protection to prevent skin and mucous membrane contact with blood ot other body fluids
    b. Wear gloves to prevent contact with blood, infectious materials, or other potentially contaminated surfaces or items
    c. Wear face protection if blood or bodily fluid droplets may be generated during a procedure
    d. Wash hands and skin immediately and thoroughly if contaminated with blood or bodily fluids
    e. Wash hands immediately after using gloves
    f. Use care when using or handling sharp instruments and needles. Place used sharps in labeled, puncture resistance containers
    g. If you have sustained an exposure ot puncture wound, immediately flush the exposed area and notify your supervisor.
716. **HAV choose procedure, data given**
    a. Soft Tissue Procedures
        i. McBride ---------- corrects HAA, medial exostectomy, excise fibular
            1. sesamoid, medial capsulorrhaphy, adductor tendon
            2. Transfer to medial capsule
        ii. Modified McBride ---------- corrects HAA, medial exostectomy, keep fibular
            1. Sesamoid, adductor tendon transfer, complete
            2. Plantar lateral tissue release
    b. Proximal Phalanx
        i. Distal Akin ---------- corrects HAI, medial-based closing wedge distally
        ii. Proximal Akin ---------- corrects DASA, medial-based closing wedge proximal
        iii. Bonney-Kessel ---------- corrects DASA, dorsiflexory osteotomy for HL/HR
        iv. Distal hemi-implant -------- corrects DASA or HAA with HL/HR
        v. Keller ---------- corrects HAA, older, RA, HL/HR, floppy toe
    c. Head procedures
        i. Reverdin ---------- corrects PASA
        ii. Reverdin-Green ---------- corrects PASA, "L" incomplete cut, plantar shelf to
        iii. protect sesamoids, lateral cortex stays intact
        iv. Reverdin-Laird ---------- corrects PASA, IMA, complete plantar shelf, through
        v. lateral cortex à shift head laterally to correct IM
        vi. Austin ---------- corrects IMA < 16, 60 degrees chevron
        vii. Youngswick ---------- corrects IMA, Austin with dorsal wedge shortens/PF,
        viii. corrects elevatus
        ix. DRATO ---------- corrects IMA, frontal plane, sagittal plane, PASA
        x. Silver ---------- medial eminence resection, no IM correction
    d. Shaft procedures
        i. Kalish or Vogler---------- corrects IMA, 55 deg long dorsal arm Austin for fixation
        ii. Scarf ---------- corrects IMA
        iii. Ludloff ---------- corrects IMA, dorsal-prox to distal-plantar cut
        iv. Mau ---------- corrects IMA, dorsal-distal to prox-plantar cut
    e. Base procedures
        i. OBWO ----------corrects IMA, medial opening wedge

ii. CBWO ----------corrects IMA, lateral closing wedge
iii. Juvara ---------- corrects IMA, oblique CBWO
iv. Crescentic ---------- corrects IMA, no shortening of metatarsal
v. Lambrinudi ---------- corrects IMA, elevatus, plantar CBWO
vi. Lapidus ---------- corrects IMA > 16, hypermobile, 1st met-cuneiform

f. Head + Base procedure = Logroscino
g. Mild, moderate, severe bunion à 15 degree IM is cut-off for 'severe' bunion
h. Silver – medial eminence resection
i. Akin – distal arm of osteotomy perpendicular to long axis of phalanx, proximal arm parallel to the articular surface of phalanx

717. **Hallux varus choose procedure, data given**

a. **Causes**
i. Long 1st metatarsal
ii. Round met head
iii. 1st MTPJ hypermobility

b. **Iatrogenic causes (MD'S FAIL)**
i. M ----- medial capsulorrhaphy overcorrected
ii. D ------ dressing too tight
iii. S ------ staking the head (over-aggressive medial eminence resection)
iv. F ------ fibular sesmoidectomy
v. A ------ over-corrected PASA
vi. I ------- IM angle overcorrected
vii. L ------ lateral release overcorrected

c. **Treatment**
i. Total soft tissue release at the 1t MPJ
ii. Medial capsulotomy
iii. Tibial sesamoidectomy (if 30 – 50% of sesamoid is peeking)
iv. Address abductor hallucis as a deforming force – transfer abductor hallucis to the plantar – lateral flexor apparatus andlateral base of the proximal phalanx

d. Osseous correction
i. Determine level of osseous deformity
ii. Revise the previous metatarsal osteotomy
iii. If the IM angle is negative, reverse the overcorrection with the appropriate osteotomy (Reverse Austin, reverse offset V, reverse CBWO)

e. Arthroplasty of the 1st MPJ for severe deformity and for non functional joint surfaces
i. Keller
ii. Implant
iii. Keller with fusion of IPJ

f. Arthrodesis of 1stMPJ
i. McKeever
ii. Lapidus
iii. If both sesamoids are removed, fuse the IPJ of the hallux

718. Early morning hyperglycemia somogyi (rebound) effect?

a. Diabetic
i. Somogyi Effect: Hypoglycemia results in rebound hyperglycemia
1. Too much insulin in the evening results in hyperglycemia in the morning. When then blood glucose level is too low, the body sometimes reacts by releasing counter-regulatory hormones (Glucagon and Epiphrine). These hormones active the Liver to convert Glycogen = Glucose, causing the blood glucose level to rise. There is a period of increase glucose following hypoglycemia.
ii. Dawn Phenomenon: Nocturnal secretion of growth hormone leading to early morning hyperglycemia.

719. Classification of pt w/diabetes and HTN…Pt is grouped under what for anesthesia

a. Class III

Class 1	Normal Healthy-no known diseases
Class 2	Mild Systemic Disease- **no functional limitation**
Class 3	Severe systemic disease (not incapacitating)- **Poorly controlled**
Class 4	Incapacitating Systemic disease (is a threat to life)
Class 5	Moribund patient who is **not expected** to live with or without surgery
E	Emergency Operation

720. Patient who has no supination of the STJ joint on gait examination (always pronated) but has ample STJ motion in both direction on NWB examination, which of the following is most likely?

a. Tibialis anterior paralysis
- i. Function: Dorsiflex and Invert the foot
- ii. Can be caused by Polio
- iii. Equinovalgus deformity leads to a Cavovarus deformity

b. **CN Coalition**
- **i. Rigid Forefoot with contracture of the Peroneal tendons**
- **ii. Ossification limits STJ ROM**
- **iii. Normal Foot: STJ rotates externally to compensate**

c. Tibialis posterior paralysis.
- i. Function: Plantarflex and Invert the foot
- ii. Planovalgus deformity

d. **Tarsal Coalitions =** 50% are bilateral

Talocalcaneal	***Calcaneonavicular***	***Talonavicular***
- Most common - Intra-articular (bridge) - 12-16yo - Lateral View= "Halo Sign" - Harris Beath - Fusion	- 2nd - Extra-articular (bar) - 8-12yo - MO à "Anteater/Comma Sign" - Symptomatic - Arthroplasty, Interposition of EDB	- 3rd - Intra-articular (bridge) - 3-5yo - Asymptomatic - Conservative 1st, asymptomatic - Then Fusion

721. **Best treatment for a Fibrous CN joint Coalition?**

a. **Resection**
- **i. Extra-articular**
- **ii. Badgley: Interposition of the EDB**

b. Orthosis
- i. Conservative treatment for TN (because its usually asymptomatic)
- ii. You want to decrease the motion of the STJ and MTJ

c. Steroid injection
- i. Temporary pain relief

722. **Which of the following would NOT improve surgical outcomes for a ganglion cyst?**

a. Incision twice in length as the width of the lesion
- **i. Ellipse length:width ratio is 4:1**

b. Incision parallel to RSTL

c. Avoid Neurovasular structures

d. Remove entire lining of cyst with ligation of stalk
- i. Gangloin Cyst: Herination of joint linings
  1. Commonly from Extensor tendon
  2. Excise if Aspiration doesn't work
  3. Low T1 intensity (black), High T2 (white)

723. **Measuring Tibial Varum, which of the following conditions is true:** *[all below are true]*

a. Measurement is taken at angle and base of gait

b. Pt is in NCSP (Rearfoot in NCSP)

c. Bisection of posterior leg is compared to bisection of posterior heel

724. Pt comes into the ER complaining of headache and numbness on one side of the body, which diagnostic test is best to order: [I think the pt is having a Stroke/CV]

a. MRI
- i. Indications: Soft Tissue, Tumor, Infection, AVN, OCD, Unexplained pain
- ii. Contrast: None
- iii. Contraindication: Pacemaker, 1st trimester, Metallic implants, Iron or sheet metal foreign bodies, Cardiac valve prosthesis
- iv. T1: Fat (white), Tendon, Ligament, Muscles, tumors (black)
- v. TR <1000, TE <50
- vi. T2: Pathology, Water (white)

b. **CT**
- i. **Indications: CVA, Cortical bone, coalitions, tumors of bone, AVN, arthritis, OCD**

c. MRI w/ contrast
- i. Indications: when you want to Differentiate
  1. Tumor from edema
  2. Inflammation and soft tissue from scar tissue
  3. Dynamic assessment of lesion types

4. Assessment of early ischemia
5. Parenchymal brain infections
6. Meningeal lesions
7. Demyelinating lesions in MS

ii. Contrast: Gadolinium

iii. Contraindication: Pacemaker, 1st trimester, Metallic implants, Iron or sheet metal foreign bodies, Cardiac valve prosthesis

d. 99 MDP Scan

i. Indications: Increased bone metabolism (fractures, osteomyelitis)

ii. Use radionuclide

725. **Osteoporosis vs osteopenia**:

a. Bell curve -0.3; osteoporosis **(<-2.5 SD**) vs osteopenia **(< -1 to -2.5 SD**)

726. Which stage of Seddon's classification of nerve injury does wallerian regeneration occur?

a. **Axonotmesis**

i. The three Seddon stages: Neuropraxia (transient loss), Axonpraxia (axon damaged), Neurotmesis (neural tube destroyed/stump neuroma)

ii. Sunderland Classification: 1st degree (transient), 2nd degree (axon damaged only/WALLERIAN DEGEN AND REGENERATION), 3rd degree (endoneurium damaged WD/WR), 4th degree (endoneurium and perineurium disrupted=neuroma incontinuity), 5th degree (completetransection)

b. **Wallerian degeneration *and regeneration* only occurs in Seddon's axonpraxia and Sunderlands 2nd and 3rd degree.** Walleriandegeneration alone occurs in other stages when the dead part of the nerve is destroyed

727. Short leg vs long leg what would you see?

a. Supination of short limb/pronation of long limb

b. Pelvic tilt to short side

c. Also: lumbar scoliosis (convex to the short side), knee flexion (increased on the long side), genu recurvatum (on the short side), subtalar joint pronation (on the long side), and ankle plantar flexion and foot supination (on the short side), Shoulder drop and head tilt (to long side),

d. Pattern A: Typical adult pattern (long left leg noted)

i. • Head leans/tilts to the left

ii. • Shoulder drops to the left

iii. • Trunk mass leans to the left

iv. • Arm swing is greater on the right

v. • Arm position is further from the body on the right

vi. • Excessive foot pronation on left

e. Pattern B: Typical youth pattern (long left leg noted)

i. • Head leans/tilts to the right

ii. • Shoulder drops to the right

iii. • Trunk mass leans to the right

iv. • Arm swing is equal or greater on either side (right or left)

v. • Arm position is further from the body on the left

vi. • Excessive foot pronation is equal or greater either side (right or left)

728. Propofol regarding causes all the following:

a. Respiratory depression, least hangover effect, less nausea and vomiting, faster recovery

729. What bunionectomy for IM angle of 11 and PASA of 20?

a. Reverdin-laird

i. PASA can be corrected by Reverdin and the only reverdin, which can account for IM is reverdin-laird… Normal IM=10, Normal Pasa=0-8

730. Picture of dorsal aspect of foot with options of

a. Nevi

b. Hemangioma

c. Melanoma

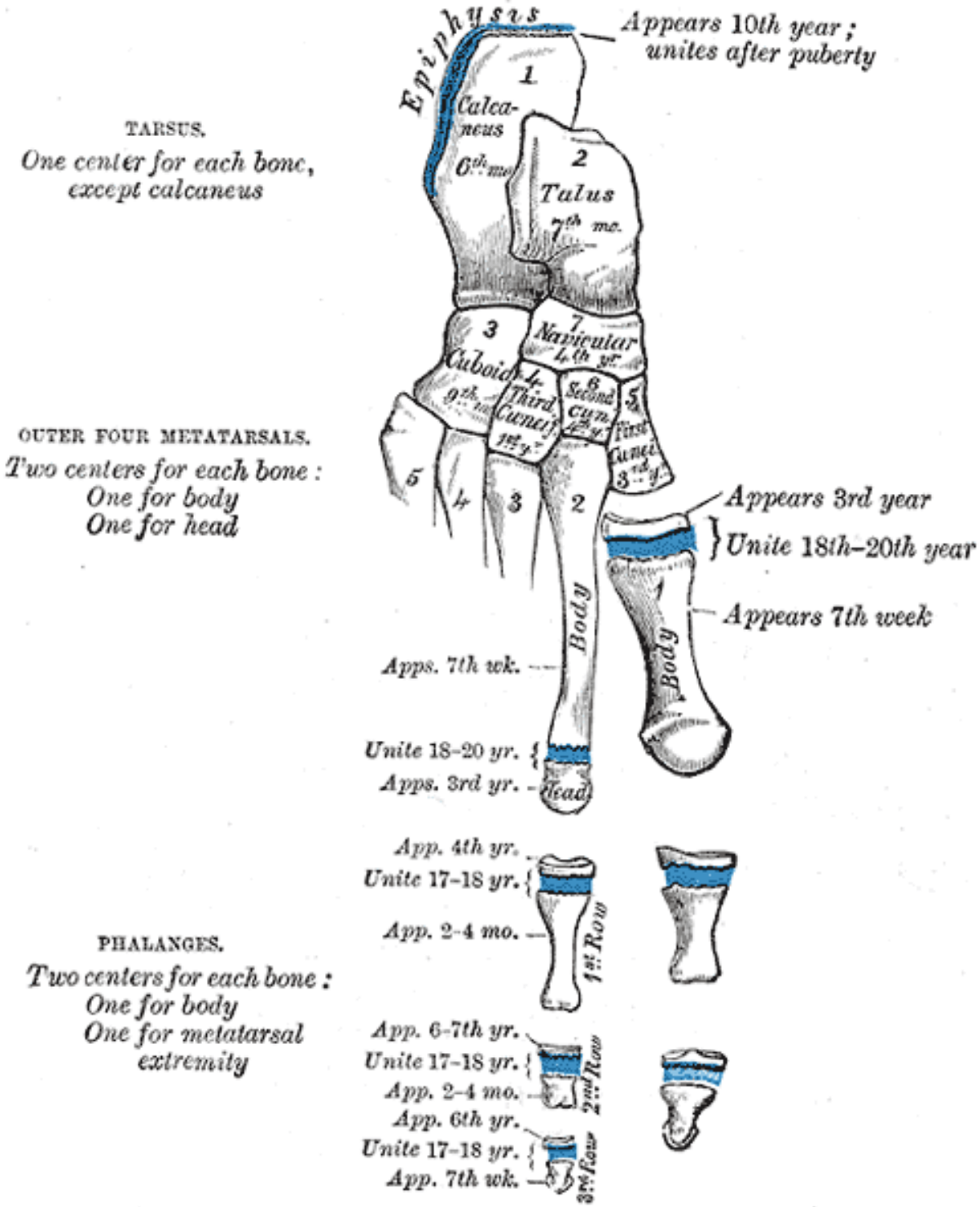
d. Amelonotic melanoma

Hemangioma

Melanoma

Amelanotic Melanoma

733. Ossifications of foot drag and drop section including the sesmoids, navicular, cuboid, etc



734. Drag and drop section what whould you see:

a. Gouty = martel sign, ankolysing spondylitis = fusion of anterior spine, psoriatic arthritis = ivory phalanx , RA = nodes at PIPJ (Bouchard)

735. Epinephrine to lidocaine what happens?

a. Increase duration

i. McGlamry: Epinephrine, a catecholamine neurotransmitter which acts on nelve synapses, is also a potent vasoconstrictor. It is commonly mixed with local anesthetics in a 1:100,000 or 1:200,000 dilution.Epinephrine's vasoconstrictive action **aids in prolonging the duration** of action of local anesthetics by inhibiting their evacuation from the injection site. The use of epinephrine in end organs, such as the digits, has historically been contraindicated, but its use has not proven to be a problem.

736. Prednisone on patient that stopped taking prednisone over a year ago what to do now?

a. 100 preop and 100 post op= persons answer

i. MY ANSWER:No peri-op steroids required if they have been off steroids >3 months. If less than 3 months, and they are taking >10mg steroids daily, give additional 25mg at induction and additional 100mg for that day with normal dose. **If they are a pt with addisons dz which means they can't make steroids at all (or if they have cushings) give 100 pre-op and 100 post-op q6h**, then double oral dose for 48h then titrate to normal dose…

b. Antidote for HPA axis suppression: 200mg IV solucortef/ hydrocortisone sodium succinate

737. Click on where you would find os peroneum on lateral view= UNDER THE CUBOID

738. What view would you see or os cuboid?

a. MO

739. Locations of common accessory ossicles and sesamoid bones seen around the foot and ankle.

a. Accessory navicular bone (1)
b. Os vesalianum (2)
c. Os peroneum (3)
d. Os intermetatarseum (4) ***{I had 2 questions that asked to point this out}***
e. Medial hallux sesamoids (5)
f. Lateral hallux sesamoid (6)
g. Hallux interphalangeal sesamoid bone (7)
h. Metatarsophalangeal sesamoid bone (8)
i. Os subfibulare (9)
j. Os subtibiale (10)
k. Os trigonum (11)
l. Os calcaneous secundarius (12)
m. Os supratalare (13)
n. Os supranaviculare (14)

740. Patient gone to army and had pain to 2nd met?

a. avalasuclar necrosis or stress fx

741. Patient is taking methotrexate (psoriasis), atenolol (HTN), NSAID, and another med that starts with a "T" (cant remember), which would have caused ankle edema?

a. DRUGS THAT CAN CAUSE ANKLE EDEMA

i. CCB (nifedipine, amlodipine, isradipine, nicardipine, felodipine, diltiazem, and verapamil)
ii. NSAIDS
iii. Hormones (birth control, estrogen, testosterone)
iv. "-Glitzones" , Insulin (DB meds)

v. Prolonged Steroid therapy
vi. Anti-depressants (MAO inhibitors (such as phenelzine and tranylcypromine) and tricyclics (such as nortriptyline, desipramine, and amitriptyline)
vii. Swelling *could* happen but is uncommon with atenolol

742. For Pronation

a. Anterior break in cyma line
b. Talar declination angle increases (normal 24)
c. Calc inlincation decreases (normal 24)
d. Lateral talocalcaneal Angle and Posterior facet angle increases (normal 45)
e. Metatarsal declincation decreased (normal 24 for first met)
f. Meary's Angle (talus to 1st met) decreases to negative angle (normal 14)

743. WHO (World Health Organization) and Red Cross

a. WHO= in Switzerland Est. on April 7, 1948 as a part of UN
i. Provides overall health trends and recommendations/training
b. Red Cross (International Red Cross with Red Crescent)
i. Provide assistance with national disaster/disease

744. Sensitivity Table

Type 1	Anaphylactic	IGE, basophils, mast cells	-Atopic Dermatitis
Type 2	Antibody	Antibody with self Ag	-Goodpasture's
Type 3	Immune complex	Antibody with immune complex	-Lupus nephritis post-strep -glomerulonephritis
Type 4	Delayed	T cell	-Contact Dermatitis -Renal transplant failure -Allergic Contact Dermatitis

745. Met Adductus

a. Will resolve by 3 mo. Usually
b. Types: Dynamic (appears only on WB due to tight AbHallucis), Flexible, Rigid
c. Angles:
i. MAA (birth=30-50, 1yo=20-30, normal/age 4=15)= 2nd and line perpendicular to axis of lesser tarsal bones
ii. Engles Angle (normal 24)= 2nd met and 2nd cuneiform bisection
iii. Lopow Technique (same as MAA) 2nd met compared to perpendicular of a line that crosses medial 5th base and lateral 1st metbase
d. Treatment
i. <3= casting and manipulation
1. Ipos shoe, bebos shoe, wheaton brace, counter rotational
2. Be sure to add a varus curve in dennis browne bar
ii. 3-6yo=Soft tissue procedure
1. HHS= release all soft tissue at Liz Franc ligament except plantar&lateral ligaments
2. Lichtblau- release of Abductor hallucis
3. Lange- release of Abductor halluces- and 1st MC capsule
4. Thompson- release of Abductor halluces and FHB medial head
e. >8yo=Osseous procedure
i. Berman&Gartland= crescentic 1-5
ii. Johnson= CBWO 1st, removal 2.5mm 2-5
iii. Lepird= Rotational osteotomy 2,3,4 with CBWO 1&5
iv. Peabody&Muro= CBWO 5, Resection base 2,3,4
v. McCormick and Blount=Lapidus, CBWO cuboid and 2-4
vi. Stytler and Vanderwald= Oblique CBWO 1-5
vii. Fowler= graft from cuboid interposed into medial cuneiform
f. Club foot
i. Angles:
1. Kites (TC) decreases; normal=20-40, CF=0-15
2. TC decreases<15 and Talo-1st Met >15= Simsons rule of 15
3. Calc inclination decreases; normal=20-25, CF=17
4. Talar Head Adduction increases; normal=10-20, CF=80-90

5. Talar Head Plantarflexion increases; normal=25-30, CF=45-65

ii. Causes: IU position, Horizontal Breach, Spina Bifida

iii. What normal? Muscular insertions and posterior facet

1. Beatson and Pearson sum of TCA on AP and lateral <40

iv. AVE casting= adduction, varus, equinus

1. Do Not Evert or Pronated the Foot

v. Most effective in first 9 months of age

vi. Weekly cast changes and manipulation for 6 weeks, then maintained for 3 months with abduction brace and night splints

vii. Complications= AVN talus (stretching arteries too fast), Navicular subluxed dorsolaterally

viii. Surgical tx kids 3-12 months

1. Turco medial hocky incision over tarsal tunnel or Cincinnati incision heel

2. Posterior release= Achilles Tendon

3. Lateral release= interosseous TC ligament and bifurcate ligament

4. Medial= Spring ligament

ix. Surgical= 1-4 yo

1. Lichtblau CBWO lateral calc

2. Evans= cuboid calc fusion

3. Ganley= CBWO lateral cuboid

746. Flat foot treatments

a. Chambers= elevate floor of sinus tarsi

b. Baker and Hill=elevate lateral posterior facet

c. Selakovich=elevate sus tali

d. Evans=OBWO anterior lateral calc

e. Dwyer= CBWO medial calc

f. Silver= OBWO posterior lateral calc

g. Koutsogiannis= medial slide calc osteotomy

h. Kidner= remove os tibalis externum and re-attach post tib

i. Cotton=OBWO medial cuneiform

j. Arthroeresis

747. Congenital hip dislocation

a. More common on left side and in females

b. Ortilani- Abduct thigh, hear click

c. Barlow-Dislocate hip by externally rotating and pressing down on thigh

d. Anchor-Increased gluteal folds on dislocated side

e. Galezzi- Lower knee position

f. Abduction test= Abduct both knees and the dislocated side will be limited

g. Review Quatdrant system (normal=lower medial quatdrant)

h. Acetabular index >30

748. Next step for arthroplasty had already had cut tendon whats next step?

a. Persons answer**: Dorsal cut at PIPJ => EDL z-lengthening => PP arthoplasty => extensor hood resection => MPJ capsulotomy =>Flexor plate release => Flexor tendon transfer**

b. According to our class notes**: Dorsal cut at PIPJ => EDL release=> PP arthoplasty => extensor hood resection => EDL z-lengthening=> MPJ capsulotomy => Flexor plate release => Flexor tendon transfer**

749. Young pt with lab values either septic or gouty attack see pocket pods chart

a. Clarity: gout is translucent

b. Septic is opaque

	Normal	***DJD/TRAUMA NON-inflammation***	***Inflamation/Gout (milky)***	***Septic***
Clarity	*Translucent*	*Translucent*	*Translucent*	*Opaque*
Color	*Colorless*	*Straw (light yellow)*	*Yellow(turbid)*	*White*
Culture	*-*	*-*	*-*	*+*
Blood Test-FBS	*=to blood*	*=to blood*	*25mg/dl(less than blood)*	*25mg/dl(less than blood)*
PMN	*<25*	*<25*	*>50*	*>75*
WBC	*<200*	*200-2000*	*2000-75000*	*>100,000*
Viscosity	*High*	*High*	*Low*	*variable*

750. Osteoid osteoma***

a. Relief with aspirin or NSAID

b. Pain increases at night

c. Central nidus less than 1.5 cm with elevated prostaglandinE2
d. Freq: calcaneus, males, 2nd decade

751. Chondroblastoma***
a. Predilection for occurring eccentric to the epiphysis
b. Usually seen when **growth plate is open**
c. Benign…may cause joint swelling

752. What degree do you rotate foot for ankle mortise?
a. Internally rotate **15 degrees**

753. What does congenital mean?
a. Born this way

754. Patient comes to ER with headache and stiff neck…CT was negative which would be next test?
a. CSF aspiration

755. Patient had sustained cat bite what would you do?
a. Incision and drainage or prophylactic abx

756. What's the drug of choice for cat bite?
a. Amoxicillin/ clavulanate (augmentin)

757. What do you give if pt is allergic to PCN?
a. Clindamycin*[best answer according to IDSA guidelines]*, Vancomycin, Levaquin, Bactrim

758. Hypothyroidism vs Hyperthyroidism? What modality would you do?
a. TSH
i. Best screening test
ii. If low, need measure of T4 and T3
b. I-123 scan and uptake
i. High in disorders with excess thyroid hormone production (Grave's, TMNG)
ii. Low with leakage of thyroid hormone (thyroiditis)

759. All of the conditions that are itchy
a. Psoriasis=scaling plaques
i. streptococcal (pharyngitis) → Guttate psoriasis
ii. Auspitz sign – take a flake of skin under the nail off and you get pinpoint bleeding underneath.
iii. Acrodermatitis continuim= only involve nail appartatus= OIL SPOTS
b. Lichen planus
i. Purple, polygonal, puritic, flat, pterygium
ii. Wickham's stria – thin white lines
iii. Hypertrophic form in foot is super itchy
c. Tinea pedis
i. Moccasin distribution
ii. Kebner phenomina = trauma (scratching) triggers psoriasis and lichen planus

760. Hallux varus what is it due to?
a. Congenital: Club foot, Met adductus
b. Trauma: Fracture
c. Iatrogenic: Staking medial eminence, negative IM, tight bandage, aggressive medial capsulorrhapy, underappreciated DASA/PASA, fibular sesamoidectomy

761. What is the cause of intoeing?
a. Femoral antiversion (positional), internal tibial torsion (structural), metatarsus adductus
[Question asked which one will NOT cause intoeing? Femoral internal torsion but knees point straight up]

762. Patient with trans met with ulcer to flap what could it be due to ?
a. Did not do TAL

763. Polydactyl
a. Pre axial => hallux
b. Post axial => 5th digit (more common)

764. Sesmoids
a. Medial Sesamoid= larger, oval
b. Lateral sesamoid= smaller, circular
c. Jahss classification of 1st MPJ dislocation
i. Type 1= Intersesamoidal ligament intact with dorsal dislocation of hallux
ii. Type 2a=ISL (intersesamoid ligament) RUPTURED (only one you can close reduce)
iii. Type 2b= ISL intact with fx of sesamoid

765. Ponsetti where would put your fingers when you cast?
a. Fingers on toes; never on calcaneus
b. Order of correction: Adduction, FF to RF varus, equinus
c. The cast should not be removed more than an hour before the new cast is applied.

766. T1 or T2 of lipoma or cyst
- **a. T1= FAT for lipoma**

767. MRI what tendon is it of hindfoot?
- **a.** Abductor hallucis, FHL, quadratus, adductor hallucis

768. What muscle do you see just below sustentaculum tali?
- **a. FHL**

769. Equinus what gait do you see:
- **a. No heel contact**

770. Equinus is it soft or hard
- **a. SOFT**
  - **i.** Bony end ROM with tarsal coalition or bone issue

771. Lidocaine causes:
- **a. Anxiety, euphoria (possible but rare), and/or lethargy**
- **b. Numbness, facial tingling restlessness, vertigo tinnitus, slurred speech, and tonic clonic seizures**
- **c. Local anesthetics are actually CNS depressants, thus tonic clonic seizures are thought to be caused by depression of inhibitory pathways.**

772. What is the treatment for lidocaine toxicity?
- **a. Epinephrine for CVS depression**
- **b. Benzo for seizure/CNS depression**
- **c. Sodium Bicarbonate for metabolic acidosis**

773. Which tarsal bones is most commonly to fracture?
- **a. Calcaneus**

774. Why would you do tendon transfer in pt with chopart amp?
- **a. Counteract equinus and/or** varus (loose the tib ant and peroneus brevis)

775. Os trigonum is painful on:
- **a. Dorsiflexion**

776. Which lab values are elevated in renal disease?
- **a. BUN, creatinine**

777. What kind of tibialus externum would be type 3?
- **a. Gorilloid**...large, traingular shaped, **osseous** bridge to navicular
  - **i.** Type 1= no bridge
  - **ii.** Type 2=cartilaginous bridge
  - **iii.** Type 3= osseous bridge

778. How to differentiate between an accessory bone and a fracture?
- **a.** Take a contralateral film

779. Biomechanical question inversion eversion with degree
- **a.** 30 Total ROM
- **b.** 10 eversion, 20 inversion
- **c.** STN=1/3Total ROM- eversion

780. What would be normal milestone of children?
- **a. 6 mo = roll over**
- **b. 9 mo = sit up**
- **c. 12 mo = stand**
- **d. 14 mo = walk**

781. What device do you use for dropfoot?
- **a. AFO**
  - **i. Bridle procedure= p**osterior tibial tendon transfer through the interosseous membrane to the dorsum of the foot with a dual anastomosis to the tendon of the anterior tibial and a rerouted peroneus longus in front of the lateral malleolus

782. Comptom vs photoelectric
- **a. Comptom: energy is scattered**
- **b. Photoelectric: energy is absorbed**

783. What's the anesthetic of choice for bier block?
- **a. Lidocaine**

784. What's the most common sign for pulmonary embolism?
- **a. Sudden chest pain w/shortness of breath,** cough, hemoptysis (rare), tachypnea
- **b. Virchow's triad**= venous stasis, hypercoagulability, endothelial damage

785. Decreased ventricular filling with increased venous pressure is what?
- **a. Hypertrophic cardiomegaly** or dilated cardiomyopathy?
  - **i.** Dilated cardiomyopathy= decreased EF due to impaired contractility
  - **ii.** Hypertrophic Cardiomyopathy=Impaired left ventricular **filling** due to thick ventricular walls

786. First degree, second degree block with atrial flutter

a. Atrial flutter => COPD, PE

787. Acute A-fib pneumonic

a. PIRATES= pulmonary dz, ischemia, RA, Anemia/Atrial myxoma, Thyrotoxicosis, Ethanol, Sepsis

788. Worldwide which is the most common way of getting aids?

a. Homosexual activity, heterosexual activity, transfusion. (**Anal sex**)

789. How much to inflate tourniquet for the ankle?

a. 100 above systolic

i. 200 above systolic for thigh and deflate for 20 min after using for two hours

ii. Avoid tourniquets with: Local trauma, Infection, PVD, Sickle cell, Severe HTN, CHF, Hx DVT

790. PPO vs HMO…setting fees

a. PPO= Dr. pays access fee to be "in the pts network" for pts so health care comes to insured at reduced rates

i. *No ceiling*

ii. *Can go to any specialist but will pay more for out of network Dr.*

b. HMO= insurance pays set amount to provider for the year

i. *Ceiling=CAPITATION*

ii. *Regulated by FEDERAL and STATE*

iii. *Most common HMO contract= network model*

iv. *Pt must always go to primary first and then can be referred to a specialist if need be*

c. PPO+HMO=POS

i. Preferred Pt Organization +Health Maintenance Organization=Pointe of Service

791. Rheumatoid arthritis what to do pre-op?

a. C-spine

i. The main concern is an iatrogenic spinal cord injury during the positioning of the head and neck during the intubation phase of the procedure

ii. Anti–citrullinated protein antibodies more specific but same sensitivity as Rh factor

iii. Also: they are at higher risk of MI, infection (continue methrotrexate thru pre-op period=new recommendation but biologics like tnf-alpha inhibitors should be stopped 1-4 weeks before sx and started 1-4 weeks after and pt should get pre-op steroids if they are taking them chronically)

792. What is the most common organism to see in OM?

a. Staph aureus

b. Classifications:

i. Waldvogel Classification

1. Hematogenous
2. Contiguous
3. OM with PVD

ii. Cierny Mader Classification Anatomic

1. Medullary

2. Superficial

3. Local

4. Diffuse

iii. Physiologic

1. A. Normal host

2. B. System, local, or systemic and local compromise

3. C. Host treatment worse than the dz

iv. Hematogenous OM

1. Birth to Age 1 and in the Adult=Septic arthtritis

2. Age 1 to Puberty= Metaphyseal OM due to growth plate protecting the joint and sluggish sinusoidal veins

793. What procedure would you use to fuse the met cuneiform on medial side?

a. Partial threaded, fully threaded, one screw, **plate**

794. Osteochondrosis on 5th

a. Islens= base of the 5th met

795. Osteochondrosis on 2nd

a. Freiburgs

796. Kid with bone tumor had originated from the neuron?

a. Ewings, **Neuroblastoma**, osteosarcoma

b. Ewings is a bone tumor derived from neural crest cells that is moth eaten with onion skin and hair on end (11,22) BUT-this could be a metastasis from a neuroblastoma

c. Neuroblastoma in the pediatric patient, the most commonly occurring metastatic tumors in the foot arise from a neuroblastoma (a small round cell sarcoma arising from

the adrenal medulla or sympathetic nervous tissue). Neuroblastoma has a predilection for long bones. One should suspect neuroblastoma in a child under the age of three any time a bone tumor is found. **Excretion of urinary catecholamines will enable differentiation from Ewing's sarcoma.**

d. Osteosarcoma=Primary bone tumor; codmans triangle, periosteal new bone formation, sunburst appearance

797. Sarcoidosis

a. Non-caseating granulomas in African American females in 3rd-4th decade

b. Presents with fever, cough, malaise, arthritis, restrictive lung dz, elevated serum ACE **Erythema nodosum**

798. What to give for malignant hyperthermia:

a. Sodium dantrolene 1mg/kg x10 doses (2.5mg/kg on initial dose)

b. First sign of MH: increase end tidal CO2

c. Lab test: CPK

799. What does sodium dantrolene inhibit?

a. Sarcoplasmic Reticulum Ca2+ Release

b. Binds to ryanodine receptor

800. Na, Ca, K which is intracellular or extracellular?

a. Intracellular: K

b. Extracellular: Na, Ca, Cl

801. Spinal anesthesia what anatomy does it go through?

a. Midline: Skin, subcutaneous tissue, supraspinous ligament, interspinous ligament, ligamentum flavum, epidural space (this is where you would stop if it asks for epidural anesthesia), dura mater, and arachnoid mater, subarachnoid space

b. Paramedian approach: skin, subcutaneous fat, ligamentum flavum, dura mater, subdural space, arachnoid mater, and then pass into the subarachnoid space

802. In General anesthesia what should be monitored?

a. Blood pressure, thing on finger (pulse Ox...) EVERY 5 MINUTES.

b. Oxygenation=inspired O2= the concentration of oxygen in the patient breathing system shall be measured by an oxygen analyzer; Blood oxygenation=pulse oximetry

c. Ventilation= chest excursion, observation of the reservoir breathing bag and auscultation of breath sounds, presence of expired carbon dioxide, When an endotracheal tube or laryngeal mask is inserted, its correct positioning must be verified by capnography (end tidal CO2)

d. Circulation= electrocardiogram, arterial blood pressure and heart rate, and one of the following: palpation of a pulse, auscultation ofheart sounds, monitoring of a tracing of intra-arterial pressure, ultrasound peripheral pulse monitoring, or pulse plethysmography or oximetry.

e. Body Temperature

803. In graves disease what would be high or low?

a. TSH low

i. LOW TSH is the first clue of an overactive thyroid!!!

b. Triiodothyronine (T3) and Thyroxine (T4) high

i. Opposite with hypothyroidism

804. When does a doctor not need consent?

a. Answer given: **when dr believes that full disclosure would be more detrimental to pts health**

b. Consent= pt must be informed on information that would ordinarily be provided to a patient under like circumstances by similar healthcare providers engaged in a similar practice in the locality or similar locality. (Note: locality rule being diluted)

c. Consent can be voiced, written, or even implied.

d. A patient has the right to know the potential risks, benefits, and alternatives of a proposed medical treatment or procedure. Does not only apply to surgical or invasive procedures, *can be the prescription of a medication*, etc.

805. Assault vs. battery

a. Assault: intent of hurting; **deliberate threat**; the apparent present ability to do physical harm to another.

b. Battery: an **intentional touching** of another person, in a socially impermissible manner, without that person's consent.

806. Type of contracts

a. Essential Elements:

i. Mutual Consent= offer and acceptance of essential terms

ii. Consideration=bargained for exchange, benefit or promise/detriment relationship

iii. No Defenses= intentional misrepresentation of a material fact upon which the party relies=fraud

807. Who investigates fraud?

a. The OIG= office of inspector general

b. Fraud has to be intentional misrepresentation of a material fact upon which the party relies

808. It prohibits physician referrals of designated health services ("DHS") for Medicare and Medicaid patients if the physician (or an immediate family member) has a financial relationship with that entity

a. Stark Law

809. When would the use of phenol not be effective?

a. Infection
b. Old bottle
c. Inadequate Application
d. Insufficient Nail removal
e. Phenol contraindicated with Infection/Vasc Compromise bc req. tourniquet

810. What is the most sensitive for onychomycosis?

a. PAS

811. What ligaments would be torn when doing anterior drawer of ankle?

a. Anterior talofibular

812. Person w/metallic foreign object of foot what would you do? What would be most common bug?

a. I&D
b. Pseudomonas
i. Sneakeràpseudomonas; treatment include: ceftazidime, zosyn, gentamycin, cipro
ii. Soil à clostridium; treatment include: PNC
iii. Most common infection àMRSA; treatment vanco, linezolid, tigec

813. Gardner w/thorn in foot whould you do and what's the bug?

a. Sporothrix schenckii
b. DOC= amphotericin B
c. Potassium Iodide also a treatment option

814. What is the proper name for PDS?

a. Polydiaxanone sutures

815. When do you use the Wheaton brace?

a. Metatarsus Adductus

816. What do you give preop for anxiety?

a. Diazepam
b. Any benzo (Versed=Midazolam)

817. Anaphylaxis what could cause?

a. Environmental, dust mites

818. How would you treat anaphylaxis reaction?

a. Epinephrine

819. If skin is red and has not become blister what degree burn is it?

a. 1st degree
b. Burns first (red), second (blister), or third degree (charcoal)

820. Increased skin lines at ankle

a. Congenital Calcaneovalgus

821. Description of hammertoe, claw toe, mallet toe

	MPJ	***PIPJ***	***DIPJ***
Hammertoe	Extension	Flexion	Neutral or Extension
Claw toe	Extension	Flexion	Flexion
Mallet toe	Neutral	Neutral	Flexion
How to splint after PIPJ arthroplasty	PF	Straight	Straight

822. How many days before/after period can you take x-rays on a woman?

a. 10 days AFTER ONSET OF MENSTRATION
i. "Whenever possible, one should confine the radiological examination of the lower abdomen and pelvis to the 10-day interval following the onset of menstruation"

823. For Danis weber and deltoid rupture what would be fracture?

a. SAD1=lateral ligament ankle rupture
b. PER and PABD 3= deltoid with fib fracture
c. PER= spiral DW type C
d. PABD= butterfly DW type B

824. MRI and it had to do with achilles tendon

a. Achilles tendonopathy=Puddu
b. Achilles Rupture=Kuwada Classification

825. RSD question **what stage** would you see on xray

a. STAGE 2

i. Sudek's Atrophy

1. Washing out of bone

826. Interossei vs. Lumbricals

a. Lumbricals plantar and interossei dorsal to transverse metatarsal ligament

i. Lumbrical 1= unipinnate, not attached to hallux, medial plantar nerve

ii. Lumbrical 2-4=bipinnate, lateral plantar nerve

iii. All lumbricals originate from FDL, flex MPJ, extend IPJ

b. Interossei

i. Plantar= Adduct 3rd, 4th, and 5th toes

ii. Dorsal 1= deep peroneal nerve, attached to hallux

iii. Dorsal 2-4 = superficial and deep lateral plantar nerve

iv. Dorsal Abduct 2nd, 3rd, and 4th digits

827. Golden period for open fractures:

a. 6-8 hrs

828. Fallen fragment sign with unicameral bone cyst

829. The only two illnesses with pathergy ***[****where minor trauma can lead to a lesion resistant to healing]****.* **What is the treatment?**

a. Bechet and Pyoderma Gangrenosum

b. Tx=steroids

830. Most common cause necrotizing fasciitis

a. Group A strep

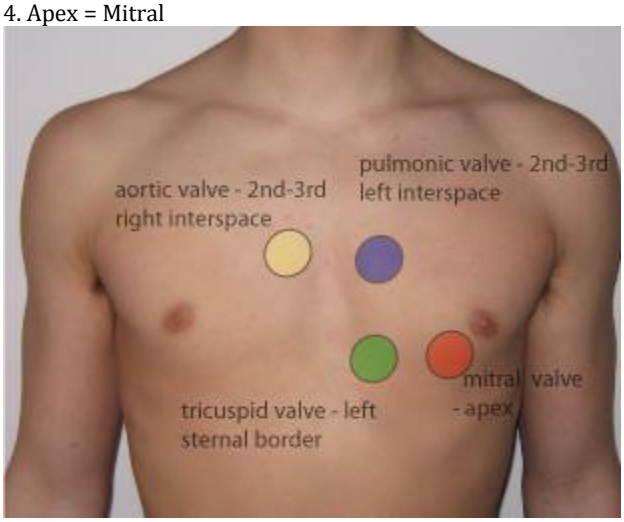
831. Antidote for lido with epi causing white toe

Phentolamine

1. **Pt overdosed on pills, and presents w/ symptoms of hepatitis. What did he take?**
    - **a. Acetaminophen**
        - i. Metabolized by the liver
        - ii. An analgesic and anti-pyretic
        - iii. Max daily dose 3g (formerly 4g)
        - iv. Overdose:
            - a. The major toxic effect is centrilobular necrosis of the liver with toxicity likely to occur after a minimum acute ingestion of about 10g (or 30 acetaminophen tablets)
            - b. Perform plasma APAP levels- treatment based accordingly
            - c. Emesis with ipecac or gastric lavage
            - d. Administer ACETYLCYSTEINE if elevated APAP plasma level
2. **Least ototoxic drug**
    - **a. Nafcillin**
        - i. Alternative med for Staph
        - ii. 2nd generation penicillin
        - iii. For beta-lactamase resistant Staph aureus
        - iv. IM or IV 1-2g q4-6 hours, metabolized by liver
        - v. Can precipitate a gouty attack
    - b. Aminoglycosides (–mycin), -platin, furocemide are ototoxic (irreversible side effect, reversible side effect – neophrotoxicity)
3. **Pt is allergic to penicillin. Best drug to cover Gram +**
    - **a. Clindamycin**
    - b. IV alternatives: Clindamycin, Vancomycin, Levaquin, Bactrim
    - c. Generalized Gram + (Gp A strep, Gp B strep, MRSA, Staph aureus), anaerobes (B. fragilis)
    - d. Staph aureus/Strep: Clindamycin 300mg po qid; Clindamycin 600mg q8 IV
    - e. Gustillo Anderson Classification of Open Fractures: Type II or Type III
    - f. Adverse reactions: diarrhea, pseudomembranous colitis
    - g. Most common cause of Clostridium difficile colitis
    - h. Metabolized by the liver
    - i. Good for a patient with diabetes and penicillin allergy

4. **Pt with CHF. What meds he doesn't need**
    - **a. Albuterol**
        - i. Treatment for anaphylaxis and asthma
        - ii. Treats airway bronchospasm and caused bronchovasodilation
        - iii. 0.5mL 0.5% in 2.5mL NS nebulized q15min
        - iv. Sample question:
            - 1. A 30 year old patient is scheduled to have major rearfoot reconstruction. The patient has a history of asthma and is currently on an albuterol nebulizer and has taken prednisone, 7.5mg, daily for the past 2 years. Prior to sx, the pod physician should do which:
                - a. (Question is really about the prednisone)….
                    - i. Answer: Increase the prednisone dose to at least 20mg per day
                - b. Long term steroid usage suppresses the hypothalamic-pituitary axis (HPA) and increases the risk for hypotensive shock. Pre op supplementation with high dose steroids will help avert this complication
5. **Alcoholic with neuropathy. HbA1C=7. Diagnosis?**
    - **a. Alcoholic neuropathy**
    - b. HbA1C
        - i. A measure of glycosylated hemoglobin and long-term glucose control
        - ii. Normal range: 4-7% of total hemoglobin
        - iii. Increased in DM
        - iv. The equation (33.3 x HbA1c – 27) estimates daily FBS over the last month
        - v. At what HbA1C is a patient diagnosed with DM? à 8.5%
    - c. Neuropathy Classiciation: DANG THERAPIST
    - d. D: Diabetic, A: Alcoholic, N: Nutritional, G: Guillan-Barre, T: Toxic, H: Hereditary, R: Recurrent, A: Amyloidosis, P: Porphyria, I: Infectious, S: Systemic, T: Tumor
6. **Painless ulcers in diabetic. Most common reason?**
    - **a. Neuropathy**
7. **Systolic murmur in 2nd space**
    - **a. Aortic stenosis**
        - i. Systolic murmur. Harsh systolic ejection murmur. Radiation to

carotids
ii. Once symptomatic, usually progresses from angina to syncope to CHF to death within 5 years
iii. Clinical symptoms: (also indications for valve replacement) ACS à Angina, CHF, Syncope
iv. Heart auscultation: All People Try McDonald's
1. Upper right sternal border = Aortic
2. Upper left sternal border = Pulmonic
3. Lower left sternal border = Tricuspid
4. Apex = Mitral



8. **What is Rovsing's sign**
a. Deep palpation of the LLQ leading to RLQ pain
b. Is usually seen in appendicitis
c. Other signs of appendicitis
i. Nausea, vomiting anorexia (Hamburger sign – anorexia is 80% specific for appendicitis)
ii. Psoas sign: passive extension of the hip leading to RLQ pain
iii. Obturator sign: passive internal rotation of the flexed hip leading to RLQ pain
iv. Fever, mild leukocytosis
9. **Patient with mitral valve replacement. Prophylaxis of endocarditis?**
a. Antibiotic regimen:
i. **Amoxicillin 2g** IV 30 min pre op followed by 1gm q8h post op
ii. If penicillin allergy: Vancomycin 1gm or Clindamycin 300mg po pre op and 150mg post op
b. Endocarditis prophylaxis indications:
i. Prosthetic heart valve
ii. Prior history of infective endocarditis
iii. Cyanotic congenital heart defect
iv. Surgically constructed systemic or pulmonary conduit
v. Hypertrophic cardiomyopathy
vi. Mitral valve prolapse with regurgitation, valve thickening or both
c. Endocarditis prophylaxis not recommended for:
i. Atrial septal defect
ii. Surgically repaired ventricular septal defect
iii. Patent ductus arteriosus
iv. Isolated mitral valve prolapse
v. Mild tricuspid regurgitation
vi. Previous rheumatic fever or Kawasaki disease without valvular dysfunction
vii. Cardiac pacemaker
viii. Implantable defibrillator
10. **With what disease do you see sausage digits?**
a. Reiter's syndrome (Reactive arthritis) *[We don't call it Reiter's no more cuz Dr. Reiter wuz a Nazi fuck!]*
i. Clinical findings
1. Polyarticular, asymmetric arthritis of lower extremity (mostly affects small bones of feet, heel, ankle, knee, SI joint)

2. Affects mostly males
3. Capsulitis with digital edema – "sausage digits"
4. Bony erosions
5. Triad: can't see, can't pee, can't climb a tree
    a. Conjunctivitis, urethritis, arthritis
    b. Also keratoderma blenorrhagicum *[looks like crushed up chocolate chips on skin]*

ii. Lab findings:
1. HLA-27 positive
2. Rheumatoid factor negative
3. ESR – elevated
4. Synovial fluid analysis - Pekin cells

iii. Radiographic findings
1. Fluffy periosteal reactions
2. Large, bilateral heel spur formation
3. Inflammation and widening of Achilles insertion
4. Deossifications

iv. Differential: Rheumatoid arthritis, Lyme disease, Gout, psoriatic arthritis
v. Usually follow an infection with Campylobacter, Shigella, Salmonella, Chlamydia, Ureaplasma

11. **What joints are commonly affected in Reiter's syndrome?**
    a. Foot and Knee
12. **What disease doesn't produce bone**
    a. Gout

i. Chronic hyperuricemia can result in monosodium urate crystal deposition in joints and soft tissues
ii. The 4 main etiological forms of gout:
1. Primary metabolic gout: chronic over-production of uric acid, often dietary in origin
2. Secondary metabolic gout: myeloproliferative disease with high rate of cellular turnover causing overproduction of uric acid
3. Primary renal gout: Underexcretion of uric acid due to primary kidney disease
4. Secondary renal gout: Underexcretion of uric acid due to renal disease other than primary kidney lesion (certain diuretic meds)

iii. Serum uric acid levels of 7mg/dL for males and 6mg/dL for females indicate a supersaturated states wherein crystals may precipitate in joints and kidneys
iv. Acute gout
1. Monoarticular, sudden onset of intensely painful inflammation (red, hot, swollen, excrutiating pain), stiffness and antalgic, guarding and overlying cutaneous desquamation.

v. Chronic gout
1. Insidious presentation with gradual, progressive tophus formation with intermittent acute gouty attacks. Associated with indurated tophus formation in subQ or tendon, small joints

vi. A draining tophus reveals a white, chalky exudate of monosodium urate crystals
vii. Diagnosis
1. Confirmed by the presence of strongly birefringent monosodium urate crystals identified in joint aspiration
2. Xrays:
    a. Acute: Increased soft tissue density and volume
    b. Chronic: Punched out, rat bite defects

viii. Differential: pseudogout, suppurative arthritis, acute bursitis, RA
ix. Treatment:
1. Symptomatic Pharmacology (relieves symptoms, but doesn't attack underlying pathophysiology
    a. **Indomethacin**: 50mg PO q8
    b. **Colchicine**: 0.5-1.0mg PO initially, then 0.5mg PO q1 hour until symptoms (GI) or pain relief. Then around 0.5mg PO qday as prophylaxis
2. Active/Physiologic Pharmocology (attacks underlying pathophysiology and prevents recurrence)
    a. **Allopurinol**: 100-600mg PO qday as single or divided doses. (overproducer)
        i. Blocks uric acid production by inhibition of the enzyme **xanthine oxidase**.
    b. **Probenecid**: 250mg PO bid for one week; then 500mg PO bid (underexcretor)
        i. Increases uric acid removal from urine (decreases reabsorption)
3. Surgical Intervention (if you get rid of the joint, then you get rid of a potential site for gout to attack!)

a. I&D/Washout
b. Arthroplasty
c. Arthrodesis

x. Patient with history of gout who is going into surgery: (gout prophylaxis)
1. Should receive colchicine 0.5 mg 3 times daily for 2-3 days prior to the operation and 4-5 days post operatively. Low risk patients do not need to be treated

13. **Ulcer with bone exposed. What test confirms osteomyelitis?**
a. Bone culture/biopsy
14. **Best way to decrease pain in acute gout**
a. Anesthetic injection
b. (See above as well)
15. **Babinski reflex**
a. UMN lesion
16. **Patient got dye in the vein, goes into shock. Diagnosis?**
a. Anaphylactoid reaction
b. What is the difference between anaphylaxis and anaphylactoid reaction?
i. Clinically, they present the same, but anaphylactoid reaction is not mediated by the IgE antibody and does not necessarily require previous exposure to the inciting substance
17. **Diagnosis of OM in bone scan:**
a. All three phases are positive
i. Phase 1: OM and Cellulitis both show increased uptake at this point
ii. Phase 2: OM and Cellulitis are both positive at this point
iii. Phase 3: OM is still positive, cellulitis becomes quiescent (negative)
b. Tech 99: Sensitive, not specific, t1/2=6h, metabolized in the kidney
i. Phase 1 – angiogram
ii. Phase 2 – blood pool
iii. Phase 3 – (3-4h) regional bone metabolism
iv. Phase 4 - (24h) Osteo BEST seen in late phase 4
c. Gallium 67: detects acute inflammation or infection, t1/2=78h
i. Binds leukocytes, bacteria, plasma proteins (transferrin)
ii. 1/3 excreted by GI tract, 1/3 by kidneys,
iii. + trauma, inflammation, active infection
iv. *if gallium shows more than tech à no osteo
d. Indium 111: take blood from patient and label leukocytes
i. Scan 19-24h later
ii. Highly sensitive, moderately specific for acute ST infection + OM
1. Negative in non-infectious, inactive, chronic OM
2. Positive in active OM
e. HMPAO: Ceretic labeled leukocytes c tech 99
i. 90% sensitive, 86% specific
ii. Best WBC scan for OM
f. Acute OM = all + (gallium focal)
g. Chronic OM= + tech, - indium, - gallium
h. Acute cellulitis= + tech, + gall (diffuse), + indium
i. Infected implant= + tech, + gall
j. Charcot= + tech, - gall, - indium
18. **Everything is true about Type 1 DM, except:**
a. Early response to oral hypoglycemic
19. **Hypercalcemia is seen in what diseases?**
a. Sarcoidosis, hyperparathyroidism, TB
20. Sarcoidosis
a. A multisymptom disease of unknown etiology characterized by noncaseating granulomas
b. Most common in African American females and Northern European caucasions, 3rd to 4th decades of life
c. Fever, cough, malaise, weight loss, dyspnea, arthritis
d. Symptoms are GRUELING: granulomas, arthritis, uveitis, erythema nodosum, lymphadenopathy, interstitial fibrosis, negative TB, gammaglobulinemia
e. Lung biopsy: noncaseating granulomas
f. Tx: Systemic corticosteroids
g. Dyspnea, lateral hilar lymphadenopathy on chest x-ray, noncaseating granulomas, increased ACE and hypercalcemia
21. Hyperparathyroidism

a. Primary cases: 80% due to single adenoma, 15% due to parathyroid hyperplasia
b. Secondary cases: Phosphate retention in chronic kidney disease, which leads to renal osteodystrophy
c. Tertiary cases: occur when chronic secondary hyperparathyroidism progresses to an unregulated state, resulting in **hypercalcemia**

22. Tuberculosis
    a. Infection due to Mycobacterium tuberculosis
    b. Presents with cough, hemoptosis, dyspnea, weight loss, fatigue, night sweats, fever, cachexia, hypoxia, tachycardia, lymphadenopathy, abnormal lung exam, prolonged >3 week symptom duration
    c. Dx: Tuberculin test (PPD)
    d. Drugs for TB: RIPE
        i. Rifampin, INH, Pyrazinamide, Ethambutol
        ii. Rifampin 600mg and isoniazid 300mg in a single daily dose for 18 months
23. Adrenal insufficiency
    a. Primary: Autoimmune adrenal cortical destruction (Addison's disease) leading to deficiencies of mineralocorticoids and glucocorticoids
    b. Secondary: Caused by decrease in ACTH production by the pituitary, most often due to cessation of long term glucocorticoid treatment
    c. Hypercalcemia is seen in up to 1/3 of cases
    d. Hyperkalemia is specific to primary adrenal insufficiency
    e. Hyponatremia and eosinophilia
    f. Low plasma cortisol levels <20ug/dL
    g. Tx: Give steroids, salt
24. Hypercalcemia complications
    a. Presents acutely with coma or altered mental status, bone disease, nephrolithiasis, abdominal pain with nausea and vomiting
    b. "Stones, bones, groans, psychiatric overtones"
25. **Sickle cell disease patient will have everything, except?**
    a. Osteolysis
        i. Marrow abnormalities: Sickle cell disease produces changes similar to thalassemia. Those changes can sometimes be mistaken for OM. Can cause infarctions in bone due to vascular blockage by abnormal RBCs
    b. Sickle cell disease
        i. Autosomal recessive disorder caused by mutation of adult hemoglobin (the beta chain has glu replaced by val)
        ii. Signs and symptoms are due to decrease in red cell survival and a tendency of sickled cells to lead to vasoocclusion
        iii. Symptoms: dacylitis, hemolysis results in anemia, jaundice, cholelithiasis, increased cardiac output (murmur and cardiomegaly) and delayed growth
        iv. Vasoocclusion leads to ischemic organ damage, splenic infarction (predisposes to pneumococcal sepsis and acute chest syndrome: pneumonia/pulmonary infarction), splenic sequestration, aplastic crisis
        v. Tx: hydroxyurea – stimulates fetal Hb (teratogenic, contraindicated in pregnancy); chronic transfusion therapy
        vi. Osteomyelitis:
            1. Common pathogens in Sickle cell patients with OM: Salmonella
            2. Predilects the diaphysis of long bones
        vii. Sickle cell ulcerations localize perimalleolar, are recurrent due to sludging of sickled RBCs and infarction. They are associated with hyperpigmentation and inflammatory infiltrate effecting induration and are very painful.
        viii. Tourniquets are contraindicated in patient's with sickle cell disease
26. **Iron deficiency anemia is a…**
    a. Microcytic hypochromic
27. Anemia = when Hemoglobin is <10gm/dL and when Hematocrit is <30%
28. Microcytic, hypochromic anemias:
    a. Iron deficiency
    b. Thalassemias
    c. Lead poisoning
29. Normocytic anemia
    a. Due to sudden loss of blood
    b. Hemolytic anemia
    c. Anemias caused by impaired production

d. Anemia of chronic disease: DM or RA

30. Macrocytic, megaloblastic anemia
    a. Vitamin B12
    b. Folate deficiency
31. **Which of the following is associated with normochromic, normocytic anemia?**
    a. Iron deficiency *[micro]*
    b. Hemolysis
    c. Folate deficiency *[macro]*
    d. Lead poisoning *[micro]*
32. **An increased risk of deep vein thrombosis is associated with**
    a. Diabetes mellitus
    b. Iron deficiency anemia
    c. Polycythemia vera
        i. The combination of intravascular hyperviscosity due to a high red cell mass and a high platelet count with functionally abnormal platelets puts patients with polycythemia vera at high risk for stroke, myocardial infarction, and venous thromboembolism.
            [Buzz word-> patients may have ERYTHROMAGLIA-> red discoloration, swelling and pain in limb.]
    d. Rheumatoid arthritis
33. **MI complication with friction rub?**
    a. Pericarditis***
34. **Patient with RIGHT chest pain, pulmonary embolism. How do you confirm this diagnosis?**
    a. V/Q study (ventilation/perfusion study)
    b. PE occurs when a clot from a peripheral location embolizes to the pulmonary vasculature
    c. <25% of deep vein thromboses distal to the iliac veins go on to develop PE.
    d. The more proximal the clot, the more likely it is to develop into a PE.
    e. "Classic Triad" of signs and symptoms of a PE:
        i. Dyspnea/SOB, Chest Pain, Hemoptysis
        ii. Please note that less than 14% of patients experience the classic triad
    f. Diagnosis of a PE
        i. **Gold standard: Pulmonary Angiography, spiral CT**
        ii. V/Q study
        iii. CXR
    g. Treatment of PE
        i. Thrombolytic Therapy:
            1. Urokinase: 4400units/kg IV over 10 min, then 4400units/kg/hr for 12 hours
            2. Streptokinase: 1.5 million units IV over 60 minutes
        ii. Pulmonary embolectomy
        iii. Various filters
35. **Test for bronchial asthma**
    a. Pulmonary function test
36. **Patient lost consciousness after venopuncture. Diagnosis?**
    a. Vaso-vagal syncope
37. **What symptom is seen in Hansen's disease (leprosy)**
    a. Polyneuropathy
    b. Results from Mycobacterium leprae, causing asymmetrical, maculopapular, hypopigmented, circumscribed skin granulomas that
    often progress to digital ainhum and spontaneous amputation.
    c. Tx: Dapsone, DDS combinded with Rifampin, Clarithromycin and Clofazimine
38. **Anaphylactic reaction**
    a. Latex allergy
39. **Patient is weak and has something on upper eyelids. Diagnosis?**
    a. Dermatomyositis
    i. Patient's may have heliotrope rash (a violacious periorbital rash), "shawl sign" (a rash involving the shoulders, upper chest and back) and or Gottron's papules (a popular rash with scales located on the dorsum of the hands over bony prominences), + ANA, + Raynauds
    ii. Similar symptoms to polymyositis plus the cutaneous involvement
    1. Symmetric, progressive proximal muscle weakness, pain and difficulty breathing or swallowing (advanced)
    iii. Increases serum CK and anti-Jo-1 antibodies seen
    iv. Muscle biopsy reveals inflammation and muscle fibers in vary stages of necrosis and regeneration

v. Tx: high dose corticosteroids with taper after 4-6 weeks; Azathioprine and/or methotrexate can be used as steroid sparing agents

40. **Thick skin on the feet**
    - **a. Scleroderma**
        - i. CREST syndrome: Calcinosis cutis, Raynaud's, Esophageal involvement, Sclerodactyly, Telangiectasias. May associated with Sjogren's syndrome
        - ii. Localized scleroderma: Morphea
        - iii. Generalized type: progressive systemic sclerosis

41. **Thyroid storm**
    - **a. Weight loss, tachycardia**
    - b. This represents the extreme states of decompensated thyrotoxicosis (hyperthyroidism)
    - c. Thyroid storm is an acute, life-threatening form of thyrotoxicosis that may present with atrial fibrillation, fever, and delirium.
      Admit to ICU.
    - d. Hyperthyroidism: thyroid overproduces thyroid hormone
        - i. Grave's disease
        - ii. Toxic multinodular goiter (Plummer's disease)
        - iii. Toxic adenomas
        - iv. Symptoms: weight loss, heat intolerance, nervousness, palpitations, increased bowel frequency, insomnia, and menstrual abnormalities
    - e. Thyrotoxic patients inadequately prepared for surgery are at great risk for developing thyroid storm from the stress of surgery
        - i. Signs and symptoms
            1. Tachycardia
            2. Fever
            3. Arrhythmias
            4. Agitation, psychosis, coma (CNS always affected)
            5. GI symptoms (abdominal pain, jaundice, vomiting)
            6. Dyspnea
    - f. Treatment
        - i. Propranolol 1-2mg IV with continuous cardiac monitoring. Repeat every 5 min until the pulse rate drops to 90-110
        - ii. PTU 300mg PO q6h (antithyroid drug: propylthiouracil)
        - iii. Saturated solution of potassium iodide 10 drops PO q8h
        - iv. Hydrocortisone 200mg IV q8h
        - v. General supportive therapy with acetaminophen, IVs and peripheral cooling
    - g. Prevention of thyroid storm from surgery
        - i. Good history
        - ii. Appropriate lab tests (T3, T4, TSH, serum cholesterol)
        - iii. Endocrinology consult to determine if thyroid disease is primary or secondary and to monitor tx

42. **Patient with DM, what don't give him?**
    - **a. Topical keratolytics**

43. **Capsaicin (relieves peripheral neuropathy pain) works by**
    - **a. Depleting substance P**

44. **Most common cause of paronychia?**
    - **a. Staph aureus**
    - b. Paronychia: an infection usually accompanying onychocryptosis. Staphylococcus is the most common organism. Candida is also common. Cultures for bacteria and fungi are indicated

45. **Patient came from a trip with a skin lesion on the ankle. Diagnosis?**
    - **a. Lyme disease**
        - **i.** DOC: Doxycycline 100mg PO qd or Rocephin (Ceftriaxone) 1g IV qd.
            - **1.** Alternative: Amoxicillin
        - **ii.** What gram negative spirochetes cause Lyme disease?
            - **1.** Borrelia burgdorferi
        - **iii.** Ixodes dammini tick transmitted, spirochetal (Borrelia burgdoferi) inflammatory disorder
        - **iv.** Symptoms:
            - **1.** Stage 1: Erythema chronicum migrans – red macule or papule that expands with a central clearing to as large as 50cm. Accompanying the skin lesion or preceding it are malaise, fever, chills, headache, and stiff neck
            - **2.** Stage 2: Neurologic abnormalities like Bell's palsy
            - **3.** Stage 3: Arthritis, especially in the knees,

v. Differential: In children, juvenile RA and in adults, Reiter's syndrome and atypical RA

46. **Everything is possible in Lyme disease, except:**
    a. Osteoporosis
    b. Lyme's disease causes polyarthritis, polyneuropathy, and cardiomyopathy
47. **Using of anticholinergic is contraindicated because----prevent reflex bradycardia (indication)**
    a. Reflex lower esophagus sphincter (?)
    b. GI & urinary tract obstruction, glaucoma, BPH, severe cardiac disease (contraindications)
48. **Long using of corticosteroids**
    a. Increase risk of infection
49. **Treatment for Positive Tzanck test [seen only for HSV1, HSV2, VZV]?**
    b. acyclovir
50. **Herpes of the dermatome. What drug for treatment?**
    a. Ganciclovir
    b. Herpes zoster = Shingles
        i. Dermatomal distribution of vesicles and demonstrates segmental weakness and pain, sometimes for years
        ii. Tzanck smear of fluid from vesicles or bullae for identification of multinucleated giant cells or other viral cytopathic effects. Stained with Giemsa's stain
51. **Red color between toes and weeping**
    a. Erythrasma
        i. Chronic, superficial infection of intertriginous skin caused by *Corynebacterium minutissimum*
        ii. Interdigital lesions appear as maceration
        iii. Glows red under coral red wood's lamp
        iv. DOC: Erythromycin
        v. Gram +, filamentous rods
52. **Patient lost his sense of taste. What drug caused this?**
    a. Terbinafine (Lamisil)
        i. Treats onychomycosis and tinea pedis (off label)
        ii. Targets dermatophytes by inhibiting ergosterol synthesis
        iii. Dosage:
            1. Pulse dosing: 250mg qd 1week per month over 2 months
            2. Normal dosing: 250mg qd 3 months
        iv. Adverse drug reactions: (Rare)
            1. Headache, abnormal taste, green vision
        v. Drug interactions – metabolized by the liver (CYP450 2D6) (check LFTs before prescribing)
            1. Cimetidine, Cyclosporine, Caffeine, Rifampin, Notriptyline
        vi. Terbinafine is a fungicidal rather than fungistatic at the minimum therapeutic dose
53. **Most sensitive to confirm onychomycosis ?**
    a. PAS
    b. Potassium hydroxide (KOH) preparation of skin or nail specimen.
    c. Septate hyphae confirms diagnosis

54. **Something on big toe. Diagnosis?**

a. Tuberous sclerosis

i. Patients with tuberous sclerosis show an acneform facial rash (adenoma sebaceum) which are angiofibromas. Some patients are also epileptic due to intracranial calcifications. This form of tuberous sclerosis is called Epiloia.

ii. Koenen's periungual fibromas are often seen on the hands and feet of about 1/3 of patients with tuberous sclerosis

55. **Excision of melanoma. What do you look at?**

a. ---Width of lesion; --anatomical location????

b. Asymmetry, Border, Color, Diameter

c. Malignant melanoma

i. A highly malignant tumor of melanocytes showing strong association with UV irradiation of high intensity.

ii. Lighter skinned ppl are more apt to develop melanomas in sun exposed areas

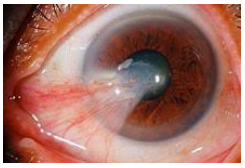
iii. Included in differential for Kaposi sarcoma

iv. Types:

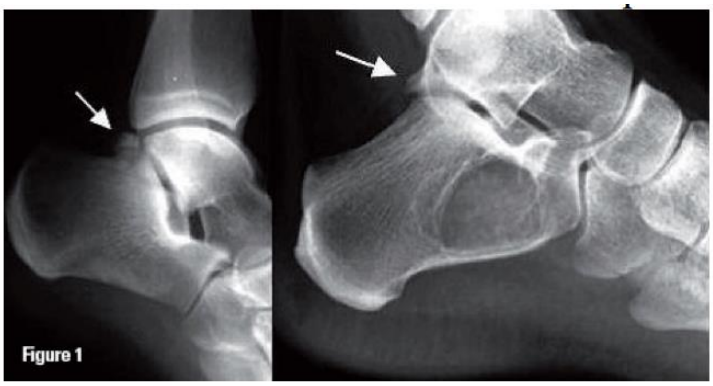
1. Lentigo maligna melanoma
    a. Almost never occurs in the foot
    b. Most common on face
    c. Least aggressive
    d. Seen in older men
2. Superficial spreading (pagetoid) melanoma
    a. Most common type in all body areas
    b. Moderately aggressive
    c. Histologically resembles Paget's disease of the breast
3. Nodular melanoma
    a. Anywhere on body
    b. Most aggressive type
    c. Which malignant melanoma is most commonly misdiagnosed as a pyogenic granuloma?
        i. Nodular
4. Acral melanoma (acral lentiginous)
    a. Occurs on extremities
    b. Most common type seen in feet of black and Asian ppl
    c. Aggressive
    d. See Hutchinson's sign (color changes in the eponychium of subungual melanomas

5. Amelanotic melanoma
    a. Lack of visible pigment
    b. Dangerous, often misdiagnosed
    c. Deeply invaseive and thick by time of diagnosis à metastasized to lymph nodes
6. Subungual melanoma
    a. Must be confirmed with biopsy
    b. Pigmented lesion of recent origin w/ no hx of trauma
    c. Does not move distally as nail grows
    d. Sudden development of melonychia striata (stripe)
    e. Chronic non-pigmented lesion that does not respond to tx
    f. Dusky, irregular pigment on eponychial tissue = Hutchinson's sign

56. Classifications of melanoma
    a. Clark: Based on histological
        i. Level 1: Located within epidermis or epidermal-dermal junction
        ii. Level 2: Located within papillary dermis
        iii. Level 3: Located within papillary-reticular junction
        iv. Level 4: Located down into reticular dermis
        v. Level 5: Located within subcutaneous tissue
    b. Breslow: Based on thickness
        i. Level 1: <0.75mm (99% cure)
        ii. Level 2: 0.76-1.5mm
        iii. Level 3: 1.51-4.0mm
        iv. Level 4: >4.0mm
57. **How to treat pitted keratolysis?**
    a. **Benzoic peroxide gel** (topical abx also: erythromycin or clindamycin)
58. **Pt has itching when he puts on socks. Diagnosis?**
    a. Lichen planus
        i. Inflammatory dermatosis involving skin or mucous membranes
        ii. Pruritic, volaceous papules clustered into large, flat topped lesions with distinct borders
        iii. May be covered in Wickham striae (white streaks)
        iv. Ridges, onycholysis, subungual hyperkeratosis, discoloration, pterygium formation
        v. Lesions favor FLEXOR surfaces
        vi. Bullous lesions of lichen planus on soles of feet may become squamous Ca
59. **Untreated lichen planus will cause what?**
    a. Pterygium



60. **Most common skin manifestation of diabetes?**
    a. Necrobiosis lipoidica
        i. Very similar histologically to granuloma annulare
        ii. Frequently associated with DM
    b. Also acanthosis nigricans, scleraderma adulterbem, and perforating disorders
61. **Pt has two feet and one hand rash. Diagnosis?**
    a. Dermatophytoses
    b. Irritant dermatitis, contact dermatitis
62. **Yellow, scaly skin in an adult**
    a. Seborrheic keratosis
63. **RADIOLOGY**
64. **Lateral X-ray (picture)**



    a. Lateral process of talus

65. **What kind of view (picture)**
    a. Calcaneal axial view

66. **Cyma line(picture)**
    a. Posterior break, supinated foot
    b. Anterior break – pronated foot
    c. S-shaped line formed by the articulation of the TN and CC joints
67. **DP view at what degrees?**
    a. 15 degrees
68. **Mortise view**
    a. 15 degrees internal rotation
69. **First early sign of RA—**
    a. Periarticular osteopenia
    b. ST swelling, Jt space narrowing, Periarticular erosions (early sign of RA)
70. **Lisfranc joint dislocation on X-ray. How to confirm diagnosis?**
    a. CT
    b. MRI would look at the integrity of the ligament
71. **Most common malignant tumor**
    a. Multiple myeloma***
        i. Punched out lesions or diffusely osteopenic with hair on end radiating spicules
        ii. 45-80yo
        iii. Painful with weakness or neurological symptoms
        iv. Bence-Jones protein found within urine
72. **Most common benign bone tumor**
    a. Osteochondroma (osteocartilagenous exostosis)***
        i. The most frequent form in the foot is the subungual (Dupuytren's) exostosis
        ii. Cartilage-capped, hyperplastic bone pointing away from the joint
        iii. 2nd to 4th decades of life
        iv. Suspect malignant transformation with growth after skeletal maturity, pain or cap>2cm
73. **Pt had gunshot wound in tibia. On X-ray radiolucency. This is infectious process. What is it?**
    a. Brodie's abscess***
        i. Chronic abcess in bone surrounded by sclerosis
        ii. Subacute osteomyelitic lesion usually found in children – young males prior to epiphyseal closure
        iii. Well circumscribed with sclerotic borders found in the metaphysis, epiphysis, rarely diaphysis
        iv. Painful with periods of exacerbation and remission
        v. Relief from aspirin, therefore must rule out osteoid osteoma
        vi. S. aureus is predominant organism
        vii. Tx: Curettage and packing with autologous bone
74. **How to make safest X-ray for pt?**
    a. Increase KVP, decrease mA
    b. Manipulation of the kVp will affect radiographic subject contrast.

c. Lower kVp will increase the contrast, higher kVp will decrease the contrast

75. Which of the following set parameters will result in the lowest radiation dose to the patient?
    a. 15mA, 10/60s, 69kVp
    b. 15mA, 10/60s, 60kVp
    c. 15mA, 5/60s, 69kVp
        i. The least time of radiation exposure while minimizing the current (mA) takes precendence over the kVp when trying to minimize radiation dose to the patient
    d. 30mA, 5/60s, 60kVp

76. If all other factors remain unchanged, a blacker radiograph can be produced by? *[This is a fucked up question cuz there's TWO right answers!]*
    a. Increase source to image distance
    b. Increasing the mA
        i. When a radiograph is taken, current is measured in milliamperes (mA).
        ii. Increasing the current increases the number of electrons emitted, which intern increases the intensity of the rays produced, thus resulting in a blacker radiograph
    c. Decreasing the kVp
        i. Making it blacker means increasing contrast. The factors that affect contrast are kVp, pt thickness, object shape, mA and atomic number, to increase contrast you can decrease kVp
    d. Decreasing the exposure time

77. **Hot water in developer. What will happened**
    a. Dark film

78. **You make X-ray for soft tissue. What to change?**
    a. Double the MA and decrease KVP by 15% = makes it darker *[which is necessary to view soft tissue]*
        i. [increase kVp by 15%= decrease mA by half. Changing both these factors have the additive effect of doubling the darkness]

79. **Distance from X-ray**
    a. Double distance / quadruple distance

80. **Overhanging margins on X-ray**
    a. Gout
        i. Increased soft tissue density with joint effusion. Tophi may be visible in soft tissue.
        ii. Fine striated pattern of periosteal reaction along the cortex adjacent to tophi
        iii. Lace pattern of osseous erosion
        iv. Round osseous erosion with a sclerotic margin ("rat bite erosion" or "punched-out lesion").
        v. **Martel's sign**: Expansile lesion with an overhanging osseous margin.

81. **Best way to r/o myositis ossificans**
    a. CT scan
    b. Myositis ossificans (Munchmeyer's disease) – soft tissue tumor
        i. A benign reactive lesion deep in striated muscle resulting from trauma
        ii. Early stages may be hard to tell on x-ray and histologically from the parosteal or extraosseous forms of osteogenic sarcoma
        iii. Older lesions appear fully ossified and may be excised if they impede function or cause pain
    c. Progressive myositis ossificans: aka fibroplasia ossificans progressive
        i. Rare childhood disorder in which there is extensive and unexplained muscular ossification
        ii. which causes extraarticular ankylosis and disuse osteoporosis
        iii. Person may have polydactyly, short hallux, brachyetatarsia
    d. Neurological myositis ossificans
        i. Similar presentation as above but occurs in conjuction with a neurogenic lesion (stroke, spina bifida, encephalitis, syphilis, brain trauma, myelomeningocoele, spinal cord hemisection, TB, polio.

82. **Aggressive tumors on X-ray have**
    a. Cortical breakage

83. **If tumor is not aggressive, what is true?**
    a. Well-defined margins

84. **ORTHOPEDICS, BIOMECHANICS, AND SPORT MEDICINE**

85. **15 year old boy with ankle pain and Halo sign**
    a. Tarsal coalition
        i. Most common: talocalcaneal > CN > TN
        ii. Ossifications occur at different ages
            1. Talocalcaneal (STJ): 12-16 years
                a. Halo sign
                b. Harris Beath show middle and posterior facet which should be pareallel to each other. They are not parallel in coalitions (middle facet is dropped)

2. Calcaneonavicular (CN): 8-12 years
    a. Anteater sign/ Comma sign
3. Talonavicular (TN): 3-5 years
    a. Putter sign

b. Clinical symptoms of tarsal coalition:
    i. Pain
    ii. Limited ROM of STJ and possibly MTJ
    iii. Peroneal spastic flatfoot

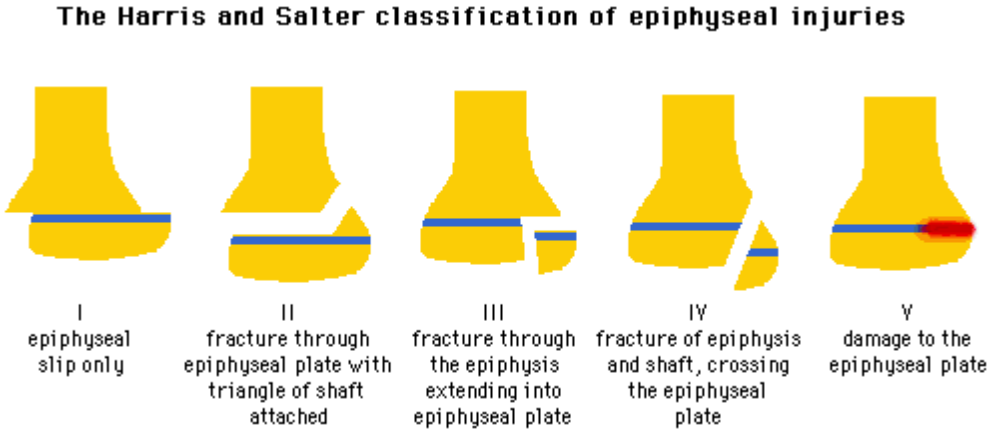
c. Radiographic findings
    i. Rounding of lateral talar process
    ii. Talar beaking due to increased stress on TN ligament
    iii. Asymmetry of anterior subtalar facet
    iv. Narrowing or absence of middle and posterior subtalar facets
    v. Halo sign: circular ring of increased trabecular pattern due to altered compressive forces
    vi. Anteater sign: C-N coalition in which the calcaneus has elongated process on lateral view
    vii. Putter sign: TN coalition in which the neck of the talus unites with broad expansion of navicular

d. Treatments
    i. Orthotics
    ii. Immobilization
    iii. NSAIDs
    iv. Badgley – surgical correction of coalition or bar with interposition of muscle belly
    v. Isolated fusion or triple arthrodesis

e. Classification
    i. Downey
        1. Juvenile
            a. Type 1 Extraarticular coalition
                i. A. No secondary arthritis = Badgley procedure
                ii. B. Secondary arthritis = Resection or triple
            b. Type 2: Intraarticular
                i. A. No secondary arthritis = resection, isolated arthrodesis, or triple
                ii. B. Secondary arthritis = Triple
        2. Adult
            a. Type 1: Extraarticular
                i. A. No secondary arthritis = resection or triple
                ii. B. Secondary arthritis = Triple
            b. Type 2: Intraarticular
                i. A. No secondary arthritis = Isolated or tirple
                ii. B. Secondary arthritis = Triple

86. **Everything can be at calcaneovalgus and vertical talus, except???**
    a. Rigid
    b. Talus on the one axis with tibia
87. **Most durable material**
    a. Polypropylene
88. **What will not cause bleeding?**
    a. Massage
89. **Patient after ankle sprain has pain during ultrasound. What you to do?**
    a. Cold pack
90. **Delivering chemicals through the skin by a direct current is called:**
    a. Iontophoresis
91. **Delivering chemicals through the skin by ultrasound is called:**
    a. **Phonophoresis**
92. **Tibia is in the varum. STJ doesn't evert completely. What is it in rearfoot?**
    a. Rearfoot valgus
    i. Partially compensated?
    ii. Rigid, not compensated
93. **Genu valgum deformity. What does this deformity cause in feet**
    a. Pronation
94. **Child presents with an ankle fracture. There is edema around the joint. The X-rays negative. Salter-Harris stage?**
    a. Salter – Harris 1
        i. Complete transverse separation of the epiphysis from the metaphysis through the physis

ii. Epiphysis separates from the metaphysis without any bone fragments. Growth is not disturbed
iii. Treatment: Closed reduction if within 7 days of injury, followed by 3-4 weeks of casting



95. **Joint with big axis in transverse plane?**
    a. STJ
        i. 42 degrees from transverse plane
        ii. 48 degrees from frontal plane
        iii. 16 degrees from sagittal plane
    b. Longitudinal midtarsal joint
        i. 15 degrees from transverse plane
        ii. 75 degrees from frontal plane
        iii. 9 degrees from sagittal plane
    c. Oblique midtarsal joint (ANSWER)
        i. 52 degrees from transverse plane
        ii. 38 degrees from frontal plane
        iii. 57 degrees from sagittal plane
    d. Ankle joint
        i. 8 degrees from transverse plane
96. **Check the posterior tibial tendon. What direction is the force?**
    a. Dorsiflexion and eversion
    b. Have the patient try to plantarflex and invert the foot against a dorsiflexion and eversion force
97. **Pain posteriorly on movement of the hallux. What is your diagnosis?**
    a. Fx of lateral tubercle of posterior process of the talus
    b. The flexor hallucis longus runs posteriorly. Movement of the hallux shortens and extends the FHL tendon which may aggravate the lateral tubercle of the posterior process of the talus
98. **Fracture of the os trigonum is also called:**
    a. Shephard's fracture
        i. Os trigonum: 2-8% occurs posterior to the lateral tubercle of the talus. When fused (~18y/o) is called Steida's process
        ii. Steida's process is also known as an enlarged os trigonum
99. **Patient with calcaneal fracture. What test other test do you need to do?**
    a. Spinal X-ray – Lumbar series
        i. May also want to do a CT
100. **Coleman test confirms everything except**
    a. Cavus foot
    b. What is the Coleman block test?
        i. Determines if the associated varus deformity of the RF is flexible or rigid.
        ii. Place pt's foot on wooden block one inch thick
            1. Place heel and lateral foot on block with medial MT heads off block.
            2. If the calcaneus returns from a varus to a normal position, the deformity is forefoot driven and is a FLEXIBLE condition.
            3. If the calcaneus remains varus after all of the FF elements are removed, it's a RF and rigid problem

101. A 47 year old patient has pain in the right ankle of several weeks' duration. The patient remembers no inciting event but says the pain worsens with increased activity. The right foot appears more pronated than the left foot on WB. On

attempts to rise to the toes, the patient has considerable pain and the rearfoot does not invert. Pain is found on palpation just proximal to the navicular tuberosity.

a. Which of the following is the most likely diagnosis?
    i. Popliteal rupture
    ii. Talonavicular bar
    iii. Calcaneal stress fracture
    iv. Tibialis posterior tendonitis
b. Which of the following examination techniques would be most appropriate?
    i. Side to side compression of the calcaneus
    ii. Supination of the subtalar joint against resistance
    iii. A calf squeeze
    iv. A coleman block test

102. **AFO are used for everything except**
a. **Compartment syndrome** – which is a surgical emergency
b. AFO's are good for:
    i. Drop foot
    ii. Severe pes cavus
    iii. Charcot foot

103. **Jones fracture**
a. NOT near styloid
b. Jones fractures are at the metaphyseal-diaphyseal junction

104. Stewart Classification system: *[I got two questions on this!]*
a. Type I: Extra articular fracture at metaphyseal-diaphyseal junction (True Jones Fx)
    i. MOI: internal rotation of the FF while the base of 5th remained fixed
    ii. Xray: oblique or transverse fx at met-dia junction
    iii. Tx:
        1. NWB SLC 4-6 weeks for nondisplaced fx
        2. ORIF with displaced fx >5mm
    iv. Very unstable fx with high incidence of nonunion/delayed union secondary to variable blood supply (met and diaph are supplied by 2 different arteries)
b. Type II: Intra articular avulsion fracture
    i. MOI: Shearing force caused by internal twisting with contracture of peroneus brevis tendon
        1. PB – attaches to tuberosity (styloid process)
    ii. Xray: 1 or 2 fx lines; intraarticular
    iii. Tx
        1. NWB SLC 4-6 weeks for nondisplaced fx
        2. ORIF for displaced fx >5mm
c. Type III: Extra-articular avulsion fractures
    i. MOI: Reflex contracture of peroneus brevis with ankle in plantarflexed position
    ii. Xray: Extra-articular, involvement of styloid process
    iii. Tx:
    1. NWB SLC 4-6 weeks for non displaced fx
    2. ORIF (pins, screws, tension band wiring) for displaced fx >5mm
    3. Consider excision of fragment and reattachment of peroneus brevis tendon
d. Type IV: Intra-articular, comminuted fx
    i. MOI: Crush injuries with base of 5th met stuck between cuboid and the external agent
    ii. Xray: Multiple fragments, joint involvement
    iii. Tx
        1. NWB SLC 4-6 weeks for non displaced fx
        2. ORIF with displacement
        3. Consider bone grafting and fragment excision with severe comminution
    iv. Misc: High rate of nonunion/delayed union
e. Type V: Extra articular avulsion fractures of the epiphysis
    i. MOI and Tx: similar to Type II and III fx
    ii. Note: only occurs in children – Similar to Salter Harris Type I fx

105. Torg Classification: Radiographic describing potential for non-union
a. Type I: Acute injuries = Narrow fracture line w/o intramedullary sclerosis
b. Type II: Delayed union = Widened fx intersurface with evidence of IM sclerosis
c. Type III: Non-union = Complete sclerotic obliteration of the IM canal

106. **Peroneal atrophy is like**
a. CMT

b. Peroneal muscular atrophy:
    i. Begins in the feet and legs producing difficulty walking
    ii. Paresthesias of the legs
    iii. Muscle cramps
    iv. Early weakness of the intrinsic muscles of the feet, ankle dorsiflexors and peroneals
    v. Patellar DTR is lost and vibratory and position senses are diminished
c. Charcot Marie Tooth disease is best known as:
    i. Peroneal muscle atrophy. As the disease progresses, symmetrical muscular atrophy and weakness are apparent in peroneal muscles and toe extensors

107. **Boy with calcaneal apophysitis. How to treat?**
a. Ice, decrease physical activity
b. Aka: Sever's disease
    i. Seen in children 8-14 years
    ii. Most common in boys 10-11y with cavus foot type
    iii. Clinical appearance: pain in the heel especially after rigorous activity
    iv. Pain is exacerbated by squeezing the medial/lateral epiphyseal margins of the calcaneus
    v. Etiology: Excessive traction on the calcaneal apophysis
    vi. X-ray findings: (all of which may be seen in normal children)
        1. Multiple centers of ossification
        2. Moth eaten appearance
        3. Sawtooth metaphysis
        4. Decreased metaphyseal density
        5. Increased density of apophysis
        6. Fragmentation of apophysis
    vii. Treatment: always conservative
        1. Cessation of rigorous physical activity, stretching posterior muscles, shock absorbing heel pad, and/or orthoses. If severe, then BK cast. viii. Primary differential: Spring heel (hematogenous OM of calc). In spring heel, the plantar tubercles typically show signs of de-ossification, not seen in Sever's

108. **What fracture does not have fx of medial malleolus?** *[Know Lauge-Hansen COLD for boards and especially for interviews]*
a. Supination Adduction Stage 1 or Stage 2
    i. SADD Stage I: lat coll lig tear w/avulsion fib fx (Web A)
    ii. SADD Stage II: Stage I + near vert medial mall fx
b. Supination External Rotation Stages 1-3
    i. SER Stage I: AITFL syndesmotic rupture/avulsion
    ii. SER Stage II: Stage I + spiral lat mall fx (Web B)
    iii. SER Stage III: PITFL syndesmotic rupture or avulsion of its insertion

109. **DANIS WEBER:**
Describes location of fibular fracture

110. Type A – transverse avulsion fracture below the level of the ankle joint
a. Corresponds with Lauge-Hansen SAD

111. Type B – spiral or oblique fracture at the level of the ankle joint
a. Corresponds with Lauge-Hansen SER and PAB

112. Type C – fracture above the level of the ankle joint
a. Maisonneuve fracture
b. Corresponds with Lauge-Hansen PER

113. **Pt with steppage (dropfoot) gait. What nerve is affected?**
a. Superficial Peroneal
b. Common peroneal nerve

114. **Most common metatarsal for brachymetatarsia**
a. 4th toe

115. **Anterior drawer sign(+).talar tilt(+).What ligament affected?**
a. Anterior talofibular and calcaneofibular ligaments
    i. ATF
        1. Anterior drawer sign
            a. 5-8mm drawer = Rupture of ATF
            b. 10-15mm drawer = rupture of ATF +CF
            c. >15mm drawer = rupture of ATF, CF, PTF
        2. Stress inversion test
            a. 5 degrees inversion = rupture of ATF

b. 10-30 degrees inversion = rupture of ATF + CF

ii. CF – talar tilt test on stress AP

1. Stress inversion projection of the ankle

a. With ankle joint anesthetized (common peroneal and sural)

b. Bilateral views are taken in plantarflexion and at right angles?

2. If >10 degrees = rupture of CF

116. **Most commonly affected ligament in an ankle sprain:**

a. Anterior talofibular ligament

117. **Closed chain supination. What happened, except**

a. Internal tibial torsion

b. Gait Cycle

i. Stance phase (62% of gait): The period of ground contact and weight support of the foot .

1. Contact period (27% of stance and 17% of the entire gait cycle)

a. Initiated by heel strike, the fully dorsiflexed foot is lowered to the ground as the body moves from a posterior position to one more directly over the foot.

b. The key locomotor events of contact are:

i. STJ pronation (for shock absorption) which is normal pronation

ii. Subtalar supination (closed chain, begins at the end of contact)

iii. Internal rotation of the leg and femur (concurrent with STJ pronation)

iv. Full loading of the metatarsus is completed by the end of contact

v. Peak vertical ground reactive forces occur for the first time at the end of contact (the first of the two periods where the ground reactive force rises above body weight during late contact phase

vi. The foot functions as a mobile adaptor in contact

vii. Internal leg rotation initiates STJ pronation

viii. At the end of contact the STJ begins supinating and it is initiated primarily by the posterior tibial and is aided somewhat by the other calf supinators and leg external rotators

c. Note: At the beginning of WB, during the entire contact period, the STJ pronates in order to make the foot more flexible and a better mobile adaptor to variances in terrain

2. Midstance period (40% of stance):

a. Foot flat begins midstance, when it bears the body weight (single support) and the alternate foot is in the swing phase.

b. The key locomotor events of midstance are:

i. Conversion of the foot from a mobile adaptor to a rigid lever for propulsion.

1. The primary condition for a rigid lever to occur is STJ supination

2. When this does not occur you have all types of problems = i.e. flatfoot

3. This leads to a poor propulsive unit

ii. A decrease in vertical ground reaction force to about 75% of body weight, but begins to increase again prior to heel lift

iii. Continued external leg rotation

iv. The contralateral limb is in swing phase

v. **STJ supination as a result of external leg rotation and the supinating calf muscles (especially the posterior tibial and swinging limb)**.

1. The foot passes through STJ neutral shortly before heel lift.

2. From this point on, the STJ is supinated

c. During midstance, the STJ is still pronated but starts supinating to convert the foot to a rigid lever

3. Propulsive period (33% of stance):

a. Continuation of the forward shifting body results in heel lift and the initiation of the propulsive period, whereby the weight is shifted to the forefoot and at the end, opposite foot regains contact with the ground by heel strike.

b. The key locomotor events of propulsion are:

i. Continued STJ supination à increases skeletal rigidity and creates a rigid lever

ii. Continued external leg rotation
iii. Second peak vertical ground reaction force (about 125% of body weight)
iv. Shift of forefoot weightbearing from lateral to medial
v. The opposite foot begins to bear weight just after lateral to medial shift and by toe-off the opposite foot is in full contact phase

4. Swing phase (38% of gait):
   a. That portion of the gait cycle when the foot is off the ground.
   b. During swing the foot pronates first and then supinates.
   c. The key events of swing phase are:
      i. During swing, the foot is transported from one step to the next
      ii. The leg continues to externally rotate momentarily after toe-off. Then it begins an internal rotation during the swing
      iii. Pronation of the foot to aid ground clearance and then resupination to prepare for contact
      iv. Ankle joint dorsiflexion, and hip/knee flexion to shorten the length of the leg (there would be a tremendous amount of pelvic motion during gait if there were no mechanisms to flex and shorten the leg length)
5. Double support:
   a. Both feet are in ground contact at the beginning and end of each stance phase in the walking gait.
   b. Both feet are on the ground 25% of the gait cycle
6. Running Gait
   a. The swing phase proportionally increases in duration, and instead of stance phase overlap, the limbs overlap in off-ground motion in a period of float
      i. There is no double support phase during running
      ii. There is an airborne phase with no ground contact
      iii. There is never more than one foot in ground contact at one time

118. **Minimal need for walking**
   a. 10 degrees of ankle DF
119. **Position of the foot during casting for a foot that overpronates?**
   a. Ankle DF, forefoot eversion
      i. Plantarflex first ray
120. **Metatarsal bar**
   a. Increase pressure on shaft of metatarsals
   b. Hallux limitus, rigidus
121. **Diabetic with neuropathy to decrease pressure**
   a. Rocker bottom shoes
122. **Ulcer under 1st met head**
   a. Rocker bottom and 1st met head cutout and heel lift
123. **All of the following can happened in calcaneus fracture except**
   a. Pes cavus

124. Bohler angle
   a. Angle formed by the intersection of a line from the superior aspect of the anterior process to superior aspect of the posterior facet and another line from the superior aspect of the posterior facet to superior point of the calcaneal process
   b. Normal 25-40°
   c. Decreases with intra-articular calcaneal fracture
125. Gissane angle
   a. Angle formed by the intersection of a line along the posterior facet and another line along the middle and anterior facets
   b. Normal is 125-140°
   c. Increases with intra-articular calcaneal fracture
126. **Most common cause of hallux limitus**
   a. Hypermobile 1st ray
   i. *Etiologies* = **TIN-MAC**
      1. **T**rauma
      2. **I**nfection
      3. **N**eoplasm of bone or soft tissue
      4. **M**etabolic

5. **A**natomic
    a. Structural = short/long 1st ray, Met Primus Elevatus
    b. Meary's Angle deviation (b/s talus should b/s 1st met)
    c. Parallelism between 1st & 2nd metatarsals
    d. Metatarsal parabola / protrusion deviation
    e. Biomechanical = pronation, **hypermobile 1st ray**
6. **C**ongenital

127. **Frequent ankle pain and pain on inversion**
    a. Tarsal coalition
128. **Which of the following is superficial heat modality?**
    a. Whirlpool
129. Superficial heat – physical agents
    a. These modalities cause a rise in tissue temp. generally limited to the skin and subcutaneous tissue.
    b. The effect is increased circulation, w/ histamine release and enhanced phagocytosis and lymph flow.
    c. Also there is a sedative type effect and increased connective tissue extensibility
        i. Hot water, Hot air, Infrared, Radiant light, Whirlpool, Paraffin vii. Hot packs
130. Deep heat – physical agents
    a. These modalities cause the same physiological effects as with superficial heat agents, but they also have the ability to heep deep structures such as muscle and joint capsule.
    b. These modalities are extremely useful for helping regain lost motion in contracted joints or shortened muscles
        i. Short wave diathermy, Microwave diathermy – not to be used if pt has a pacemaker, Ultrasound
131. **Pt with pacemaker. What is not contraindicated?**
    a. Ultrasound or short wave diathermy
    b. Microwave diathermy is contraindicated
132. **SURGERY, ANESTHESIA, HOSPITAL PROTOCOL**
133. **Pt is going to surgery. What would you the most worry about?**
    a. Pt was taking high dose of prednisone and stopped 4 weeks ago
    b. RA patients:
    i. Aspirin should be discontinued 1 week prior to sx
    ii. NSAIDS should be stopped 5 days prior to sx
    iii. Both Aspirin and NSAIDs can be resumed post op unless patient is planned for anticoags (heparin or warfarin)
    iv. Glucocorticoids should be reduced to lowest possible maintenance dose in the periop setting to reduce risk of post op
    infection and wound healing complications
    1. 100mg of methylprednisone given pre op
    2. If dx is severe or sx is extensive, 25-50mg q8h for 48-72h may be given post op
134. **Which of the following can be used as a buffer to decrease painful injection of local anesthetic?**
    a. Sodium bicarbonate
135. **Most commonly used anesthetic**
    a. Propofol (Diprivan)
        i. Patients who have an egg shell allergy will react to propofol
136. **What nerves are involved in Mayo block?**
    a. Saphenous, medial plantar, deep peroneal, and medial dorsal cutaneous (superficial peroneal)

137. **Bisection of first metatarsal goes through sesamoid. What position of sesamoid?**
    a. 4
138. **Anesthetic with 'emergence delirium'**
    a. Ketamine
139. **Antidote of narcotic analgesic**
    a. Naloxone(Narcan) or Naltrexone
140. **Pt doesn't have hypermobile first ray. What you will not to do?**
    a. Lapidus fusion
141. **Flexor substitution. What is it?**
    a. Weak Achilles tendon
142. **Lag technique. Next step?**
    a. Countersink
143. **Pt has hallux varus after sx. What you should do?**
    a. Reverse osteotomy and fusion of IPJ
144. **What joint we do not fuse in arthrodesis**

a. Navicular-cuneiform

i. Triple arthrodesis:

1. Resect: TN then CC joint then TC joint (ten cats to call)
2. Fixation Order: TC then TN then CC (to call ten cats)

145. **Fissuring of skin graft is done for what?**

a. Prevent fluid accumulation under the graft

146. **Pt had a surgical repair of lateral talofibular ligament and peroneus brevis. How to cast?**

a. Everted and slightly plantarflexed

147. **Atrophic nonunion**

a. Has no blood supply

148. Delayed union:

a. Healing has not advanced at the average rate for the location and type of fracture/osteotomy
b. Time frame cannot be arbitrarily set, but most doctors consider a delayed union at 4-6 months
c. Treatment: Delayed unions can often be healed by strict immobilization (NWB) alone

149. Nonunion:

a. Established when all reparative processes of healing have stopped
b. Time frame can not be arbitrarily set, but most doctors consider a nonunion at about 8-9 months (Medicare considers a nonunion
at 90 days)

c. Weber and Cech: (8-9 months of non-healing)

i. **Hypertrophic** (Vascular/reactive):

1. Elephant's foot
   a. Hypertrophic, large callus, greatest chance of healing
      i. Hypertrophic nonunions can often be treated by stable fixation alone
2. Horse's hoof
   a. Mildly hypertrophic, poor callus
3. Oligotrophic
   a. Not hypertrophic, no callus

ii. **Atrophic** (Avascular/Nonreactive):

1. No bone callus
2. Torsion wedge: intermediate fragment that has healed to one of the main fragments, but not with the other
3. Without gap: Butterfly fragment (Comminuted – intermediate fragment that has become necrotic)
4. Gap: Defect, Atrophic
5. Can determine differences with bone scan

d. Treatment:

i. Generally, only intervention by a bone stimulator or operative means will heal a nonunion.
   1. Electrical bone growth stimulation-creates an electronegative polarity in the collagen-promotes bone growth

ii. **Atrophic nonunions** usually require a bone graft.

e. Pseudoarthrosis

i. End stage of a nonunion
ii. A fibrocartilaginous surface develops at the bone fracture site and a joint space develops that may contain synovial fluid
iii. Treatment
   1. Operative intervention is the only reliable method of gaining union

f. Malunion: a fracture that heals in anatomically incorrect position

150. **Difference btw primary and secondary bone healing**

a. Secondary has bone callus (hematoma)

151. Primary bone healing

a. Fracture reduction
b. Fracture stabilization: Bypasses the formation of a fibrocartilagenous callus with simultaneous bone formation via Haversian remodeling
c. Preservation of fragment vascularity
d. Occurs when there is good opposition and no motion at the fracture/osteotomy site
e. Desirable method of healing

152. Secondary bone healing (Six phases)

a. Hematoma formation: Between fx fragments (1-3d)
b. Hematoma organization: Inflammation (3-10d)
c. Fibrocartilagenous callus: Osteoclastic phagocytosis of necrotic bone with osteoblastic differentiation into cartilage –low O_2 tension or fracture instability or bone-high O_2 tension/stability (10d-6wks)

d. Primary bone callus: Condensation of fibrocartilagenous callus into bone that bridges fracture interface (6-10weeks)
e. Primary bone callus absorption: New bone remodeling into 2o bone callus (2.5-4mo)
f. Remodeling: Alteration of bone in response to applied forces! (Wolf's Law)
g. Occurs when there is motion at the fracture/osteotomy site replaced by bone
h. Less desirable method of healing

153. **Self-retraining retractor**
    a. Alm
154. **Most common complication of suture anchors?**
    a. Suture breaking (also knot not sliding)
155. **What is sterile on the table?**
    a. Only horizontal surface
156. **Complications of the base osteotomy**
    a. Elevatus
    b. Shortening of the first ray
    c. Typically should be nonweigthbearing for an extended period of time
    d. Risking transfer pressure onto a resulting or already longer 2nd metatarsal
157. **Hallux deviated medially. What is it?**
    a. Hallux varus
158. **Treatment for hallux limitus**
    a. Reverse Austin??? (answer given here)
    b. Keller
    c. Hemi-implant
    d. Watermann
    e. Fusion
159. **Pt is worried before surgery. Treatment?**
    a. Benzodiazepine (diazepam)
        i. Anxietolytic agent
            1. Anxiety, insomnia, alcohol withdrawal, muscle spasm, night terrors, sleepwalking
            2. Side effects: ↓sleep duration; risk of abuse, tolerance, and dependence; disinhibition in young or old patients; confusion.
160. **PTTD Stage 2. What procedure to do?**
    a. Tendon transfer
    b. Also medial displacement calcaneal osteotomy, STJ arthroeresis, and AFO
161. What are the stages of PTTD:
    a. Stage I:
        i. Tenosynovitis with mild tendon degeneration; flexible rearfoot; Mild weakness of single heel raise and negative "too many toes" sign
        ii. Tx: Conservative treatment; Tenosynovectomy; Tendon Debridement
    b. Stage II:
        i. Elongated tendon with tendon degeneration; flexible rearfoot; Marked weakness of single heel raise and positive "too many toes" sign
        ii. Tx: Tendon transfer; Rearfoot arthrodesis
    c. Stage III:
        i. Elongated and ruptured tendon; Rigid valgus rearfoot; Marked weakness of single heel raise and positive "too many toes" sign
        ii. Tx: Isolated rearfoot arthrodesis; Triple arthrodesis
    d. Stage IV:
        i. Same as Stage III with a rigid ankle valgus
        ii. Tx: TTC arthrodesis; Pantalar arthrodesis
162. **When you wash hands?**
    a. Water drops from elbows
163. **2 group of risk to work in the hospital**
    a. Occasional work with blood
164. **What can you damage dissecting 1st met cuneiform joint**
    a. Medial tarsal artery
        i. Perforating
165. **Amide for local anesthesia**
    a. Lidocaine
    i. All the ones with 2 I's
166. **Local anesthetic which doesn't cause vasodilatation**

a. Cocaine

167. **Where do you report about infection and disease**
    a. Disease prevention organization= CDC
168. **You do not need to hide personal information about a patient when…**
    a. Sending the referral to physician
169. **Something about payments**
    a. Pay in advance*
    b. Premium – amount policy holder or employer PAYS for the coverage
    c. Deductible – amount policy holder pays out of pocket, before insurance company will pay out
    d. Co-payment – *amount policy holder pays for a visit or service (insurance pays for the rest)*
    e. *Co-insurance – instead of co-pay, policy-holder pays a % of the cost of services (i.e. 20% vs. 80%)*
        i. *For example*: the member might have to pay 20% of the cost of surgery over and above a co-payment, while the insurance company pay the other 80%
    f. **(BQ) Out-of-pocket maximums**: Similar to coverage limits, except the patient payment obligation ends when they reach the outof-pocket maximum, ins company pays all further covered costs.
    g. ***(BQ) Capititation*** = HMOs = amount paid by an insurer to a doctor/group (provider agrees to treat all patients with that insurance for same cost)
170. **What is morbidity?**
    a. Disease rate
171. **Insurance for poor people**
    a. Medicaid
172. **Endemic in the USA**
    a. TB
        i. AIDS
        ii. Syphilis
        iii. Common cold
    b. Endemic – constant presence and/or usual prevalence of a disease or infectious agent **in a population within a geographic area**
    c. Hyperendemic **–** persistent, high levels of disease occurrence
    d. Epidemic – an increase, **often sudden**, in the number of cases of a disease above what is normally expected in that population in that area
    e. Outbreak **–** same definition as epidemic, but used for a more limited geographic area
    f. Cluster **–** an aggregation of cases grouped in place and time that are suspected to be greater than the number expected, even though the expected number may not be known
    g. Pandemic – refers to an epidemic that has ***spread over several countries or continents***, usually affecting a large number of people
173. **Disclosure of information. What should you to tell to pt**
    a. Customarily in community
    b. All known risk
174. **Poikilocytosis: abnormal RBC shape**
    a. **Associated w/ iron deficiency anemia*****
175. **Order to close reduce (Charnley)**
    a. Increase deformity then Distract then Reduction then maintain position
176. **Order to reduce clubfoot using Ponseti method**
    a. **Cavus then varus then equinus**
    b. Practice test said adduction, inversion, internal tibial torsion, and equinus
    c. Ponseti technique
        i. Serial casting
        ii. First correct the FF and RF deformities, and then correct ankle equinus
        iii. During manipulation, pressure is applied to the head of the talus (not the calcaneus)
        iv. 4-8 casts, percutaneous Achilles tenotomy (last cast for 3 weeks), occasional TA transfer, and D-B bar brace until age 3 y/o to prevent relapse
177. **Onychomycosis**
    a. **Routinely diagnosed w/ PAS stain**
178. **CPK (creatine phosphokinase)**
    a. Increased CK:
        i. **Malignant hyperthermia**, rhabdomyolysis, MI, muscular dystrophy, myositis
    b. Decreased CK:
        i. Alcoholic liver disease and rheumatoid arthritis.
    c. **Lactate dehydrogenase (ldh)/creatine phosphokinase (cpk)**
        i. LDH: Normal Range = 88-230 U/L

1. LDH is an important enzyme used in carbohydrate metabolism
2. It is used to detect MI – it rises 3-6h post MI and remains high for approximately 1 week

ii. CPK: Normal Range = 32-267 U/L

1. CPK is a muscle enzyme and is released in muscle turnover or muscle damage.
2. It is also used as a marker to detect MI – levels rise immediately after MI and remain high for 2-3 days.

179. **Which of the following is the most sensitive blood test for neuromuscular disorders?**

a. Creatine phosphokinase
b. Lactate dehydrogenase
c. Alkaline phosphatase
d. Acid phosphatase

i. Answer Explanation: Creatine phosphokinase is an enzyme found in heart, brain, and skeletal muscle tissue. It is used to detect muscle disorders in serum blood testing.

180. A patient's blood laboratory results reveal elevated levels of creatine phosphokinase, aldolase, and alanine transaminase. Which of the following is the most likely diagnosis?

a. Muscular dystrophy
b. Rheumatoid arthritis
c. Aneurysmal bone cyst
d. Cerebral palsy

i. Answer Explanation: All three tests when elevated suggest myopathy or a neuromuscular disease such as muscular dystrophy.

181. **Afib: most common cardiac arrhythmia (abnormal heart rhythm)**

a. **Tx: Cardioversion**
b. **ATRIAL FIBRILLATION:**

i. Can be spontaneous and last hr-days ii. Pulse rate is 400-600 bpm = results in a decrease in output due to total dysfunction of the atria. Rate is variable, rhythm is irregularly regular, P waves are indistinguishable, and the PR interval immeasurable.
iii. Seen in pts w/rheumatic heart disease, CAD, PE, HTN, alcohol abuse, CO poisoning, electrolyte imbalances, hyperthyroidism
iv. Classic presentation = drinking too much alcohol at holidays = "holiday heart syndrome"
v. Treatment

1. Same as for atrial flutter = Meds if cardiac function is normal. If not, digitalis or cardioversion is indicated
2. Pt also needs to be put on anticoagulants to prevent blood clot formation in atria

182. A 52-year-old man experienced pain in his left arm, chest, and jaw for 5 minutes. He took nitroglycerin sublingually with no relief. He is taken to the ED where it is determined that he had an acute MI. Which of the following is a life-threatening dysrhythmia he will most likely experience during the first hour following the myocardial infarction?

a. Atrial flutter
b. Atrial fibrillation
c. Ventricular flutter
d. Ventricular fibrillation

i. Ventricular fibrillation is a life-threatening dysrhythmia that occurs in the early phases of a myocardial infarction.

183. **Pick out LisFranc**

a. Ligament runs from medial cuneiform to the base of the 2nd metatarsal

184. **Which abx penetrates glycocalyx?**

a. Vancomycin, Clindamycin

185. Best Abx for IV drug user?

a. Vancomycin

186. **Pseudomonas infection: need Gram (-) coverage**

a. **Quinolone** (-floxacin) (answer), but the following also cover: Aminoglycosides (-mycin), Zosyn

187. **30% AT rupture**

a. **Long leg cast w/ PF**

188. After the primary repair of a ruptured anterior tibial tendon, the most appropriate casting technique would be

a. Short leg cast with the ankle neutral

i. Explanation of answer: A short leg cast with the ankle neutral will provide zero tension and ideal positioning for healingof a repaired anterior tibial tendon.

b. Short leg cast with the ankle plantarflexed
c. Long leg cast with the ankle plantarflexed
d. Long leg cast with the ankle neutral

189. **Dark on MRI both T1 and T2**
    a. **Ligament, tendon, cortical bone, fibrous tissue**
190. **Gallidium contrast**
    a. Pick 3: T1 T2 CT iodine SIIR
    b. Answer: T1, T2 and STIR, because Gadolinium is used with MRI contrast studies
    c. CT uses Iodine contrast
191. **Acute OM**
    a. **Diagnosis by MRI (T2)** (best clinically; although bone bx is true definitive way of telling)
192. **Neuroma**
    a. Diagnosis by ultrasound
193. **Ossified hematoma**
    a. Children
    b. Ossified hematoma = myositis ossificans progressiva
    c. Myositis ossificans
        i. A benign reactive lesion deep in striated muscle resulting from trauma
        ii. Early stages may be hard to tell on x-ray and histologically from the periosteal or extraosseous forms of osteogenic sarcoma
        iii. Older lesions appear fully ossified and may be excised if they impede function or cause pain
    d. Myositis ossificans progressiva
        i. A rare hereditary disease of children and young adults in which ossified lesions affect many tissues and are not related to trauma (patients may show shortened digits, absent thumbs and great toes, or hallux valgus bilaterally)
        ii. A rare childhood disorder in which there is extensive and unexplained muscular ossification which causes extraarticular ankylosis and disuse osteoporosis
        iii. May be associated with brachymetatarsia, polydactyly, short hallux
    e. The clinical presentation of a child with shortened digits and hallux valgus may signify?
        i. Myositis ossificans progressiva
194. **Paronychia**
    a. PNA without anesthesia (I think this was on a baby)
195. **Hallux limitus?**
    a. Fusion
196. **Apophysitis common in children**
    a. Calcaneal
    b. The **calcaneal apophysis** is located at the posterior aspect of the calcaneus, and has irregular margins. It is often mistaken for a fracture.
    c. Appears at age 7
    d. Sever's Disease (calcaneal apophysitis):
        i. Clinical appearance
            1. Seen in children ages 8-14 years.
            2. Most common in boys 10-11 with a cavus foot type.
            3. Complaints are pain in the heel especially after rigorous activity.
            4. Squeezing the medial/lateral epiphyseal margins of the calcaneus exacerbates pain.
        ii. Etiology:
            1. Excessive traction on the calcaneal apophysis
        iii. X-ray findings:
            1. Multiple centers of ossification. Moth eaten appearance of bone, and apophyseal sclerosis (all of which also can be seen in a normal apophysis)
        iv. Treatment:
            1. Cessation of rigorous physical activity, stretching of posterior muscles, shock absorbing heel pad, and/or orthoses. If severe then a BK cast.
197. **Propofol**
    a. Decreases arterial pressure
    b. Induction agent
        i. Most popular IV induction agent b/c of rapid clearance, anti-ametic (inhibits nausea)
        ii. Disadvantages: injection pain, respiratory inhibition*, Most myocardial depression, Hypotension, Expensive
198. **Monchenburg**
    a. ABI 1.31
    b. Calcifications w/o claudication = not occlusive!
199. **White, blue, red**
    a. Raynaud's Phenomenon

i. Cutaneous color changes, produced by reversible spasm of arterioles/ small arteries brought on by exposure to cold or emotional upset.
ii. Triphasic sequence of color changes that is well-demarcated
1. White: (pallor) ischemia, often the only color change
2. Blue: venous congestion and cyanosis
3. Red: reactive hyperemia, may present with a throbbing pain, most commonly tingling and burning "pins and needles"

200. **What type of drugs might precipitate a gouty attack?**
a. Loop diuretics
i. Furosemide, ethacrynic acid, bumetanide,HCTZ torsemide may cause hyperuricemia
201. **Most diagnostic test for Gout**
a. Joint aspiration
202. **Indications for bone scan – pick 3**
a. OM – sensitive but not specific
b. RSD
c. Charcot
203. **Bone scan (+) all 3 phases**
a. RSD or Charcot
b. Osteomyelitis is (+) all 3 phases
c. Cellulitis not + in third phase
204. **WBC 13,000, pain MPJ**
a. Septic arthritis
205. **NCSPS 5 deg. Varus RCSP 0 deg**
a. Fully compensated
206. **RCSP**
a. 4 deg varus = person probably has a rigid FF 1st ray
207. **What would you see in a kid with equinus?**
a. Early heel off, adducted gait, MTJ pronation
208. **Not visible on X ray**
a. Toothpick
209. **Timeout**
a. Before procedure
210. **Stark's law**
a. Physician self-referral is the practice of a physician referring a patient to a medical facility in which he/she has a financial interest, be it ownership, investment, or a structured compensation arrangement
211. **When prescribing children medications, factor in their:**
a. Weight
212. **Which insurance type has the tightest control?**
a. HMOs
213. **Mycosis fungoides**
a. Most common form of T cell lymphoma (Cutaneous T-cell lymphoma)
214. **HIV patient**
a. T cells (also CD4, viral load)
215. **Medicare A**
a. Pastoral care
b. Medicare – 1965 Amendment (TITLE 18)- provides health care for elderly, blind, and disable
i. Part A – involuntary, hospital
1. Inpatient services
2. Extended care services (SNF)
3. Home health, diagnostics
ii. Part B – voluntary, medical
1. Doc visits, x-rays, vaccines, out-patient procedures, DME
2. $140 deductible; 80% of approved costs – 20% is patient responsibility
iii. Part C – Medicare advantage plans
1. Medicare pays the private companies for both A & B services; adds dental, vision, Rx; encourages preventative care (i.e. Humana)
iv. Part D – Prescription drug (Medicare D "donut hole")
216. **Pick 2: Dorsal exostosis**
a. Lateral, MO
217. **Cyst in medial cuneiform**
a. AP, LO

218. **To view the tibial sesamoid**
    a. AP, Sesamoid Axial, LO, Lat (Pick 3)
219. **Anterior calcaneal process**
    a. MO
220. **Harris-Beath View**
    a. **Good view for Tarsal Coalition** (STJ) – posterior and middle facets, Sustentaculum tali
    b. Useful in examining the STJ (T-C coalitions of the posterior or middle facets), Calcaneal fractures, and sustentaculum tali. 3 exposures taken with the x-ray tube set at 35°, next at 40°, and then at 45°
221. **Why was the Harris Beath view first used?**
    a. Evaluate rigid flat feet in Army recruits with medial or posterior calcaneal facet coalitions
222. **What would you reflect off floor of the sinus tarsi?**
    a. EDB, EHB
223. **What is proper tetanus prophylaxis protocol?**
    a. Clean and minor wounds:
        i. Toxoid (0.5mL IM) given only if last dose was given >10 yrs ago
    b. All other wounds
        i. Toxoid (0.5mL IM) given only if last dose was given >5 yrs ago
    c. Tetanus immunoglobulin is only to those who have never received a tetanus shot or can't remember if they have been immunized
        i. <5y: give 75U
        ii. 5-10y: give 125U
        iii. >10y: give 250U
224. **Tetanus 250 immunoglobulin**
    a. Must be give in 2 different injection sites
225. Patient does not recall if he has ever received a tetanus shot? What do you do?
    a. Give tetanus toxoid, then give TIG if dirty
226. **Vitamin B12**
    a. Megaloblastic anemia- Folate deficiency IBD
227. Megaloblastic Anemias: Folate or B12 deficiency
    a. B12 binds with IF and subsequently absorbed in the ileum
        i. A decrease in B12 is referred to as **"pernicious anemia"** and is often caused from atrophy of the gastric musosa which results in decreased intrinsic factor secretion
        ii. It may occur possibly secondary to an Ab reaction against the gastric parietal cells
            1. This more commonly occurs in the elderly (>60 year of age)
    b. Folate is absorbed in the upper small intestine - a def of folate manifests more quickly as body stores only last a few months i. Drug tx may cause folate def = **phenytoin, anti-metabolites (especially MTX), Bactrim, and pyrimethamine**
    c. Clinical Features: Glossitis and a variety of GI s/s (indigestion, bloating, anorexia, diarrhea)
    d. Restless leg syndrome (Ekbom's Syndrome): The neurologic disease points to a B12 def and not a folate deficiency alone (degeneration of the dorsal and lateral columns the legs affected more severely than the arms)
228. **True tibial varum**
    a. Bow legs
229. **A sick kid with chunks out of tibia upon X-ray:**
    a. **Osgood Shlatter or Rickets** (?)
        i. Osgood Shlatter
            1. Overuse apophysitis of the tibial tubercle. Caused by a partial disruption of the tibial patellar ligament (w/ or w/o avulsion).
            2. Causes localized pain, especially with quadriceps contraction, in active young boys.
            3. Not a true AVN affecting the tibial tuberosity.
            4. Commonly ossific nodules are seen with this disease, forming a large, prominent tibial tuberosity. The course is self-limiting and affects mainly males 11-15 y/o. 5. Differential diagnosis: Must R/O osteogenic sarcoma (osteosarcoma)
            6. Treatment:
                a. ↓ activity for 2–3 months or until asymptomatic.
                b. A neoprene brace may provide symptomatic relief.
        ii. Rickets
            1. Osteomalacia seen in children, usually due to vitamin D deficiency (but also due to renal disease.)
            2. Typically affects children 6-12 months old, and will be accompanied by muscle tetany, irritability, and weakness.

3. Physical development is impaired, bone growth is impaired and deforms. Cartilage in the epiphyseal plates hypertrophies and is surrounded by edema.
4. CXR shows a rachitic rosary about the costochondral junctions. Proximal calcification of the metaphyses is absent, and margins are frayed and cupped.
5. Pseudofractures are also seen in rickets as well as tibial/femoral bowing.

230. **Osteosarcoma*****
    a. Malignant bone forming tumor
    b. Most common malignant bone tumor with exception of Multiple Myeloma
    c. Age 10-25 years and >40 years
    d. Most commonly found in metaphyseal region around the knee (distal femur/proximal tibia)
    e. Teenagers during rapid growth spurts or in patient's over 50 who have preexisting condition (Paget's disease)
    f. Symptoms: pain, swelling, fever. Osteoid producing nature of the tumor often yields elevated alkaline phosphatase levels
    g. X-ray: Variable (osteolytic or sclerotic in nature) Penetration of cortical bone usually occurs with a Codman's triangle or "Sunburst" appearance
    h. Poor prognosis
231. **Lis Franc ligament attaches from:**
    a. Medial cuneiform to 2nd met base
232. **What do you do to see the FF better on X-ray?**
    a. Decrease MA 30%
233. **Erythema nodosa**
    a. Skin lesions
        i. Acute inflammatory/immunologic disorder with panniculitis and painful nodules on the anterior shins. It may be associated with infections, drugs, sarcoidosis, ulcerative colitis
234. A 30-year-old patient presents with bilateral ankle pain. A systems review is positive for SOB and dry cough. Physical exam reveals multiple tender erythematous subcutaneous nodules on both legs. The probable etiology of the ankle pain is
    a. Sarcoidosis
        i. Erythema nodosum and subQ nodule formation are common in latter stages of sarcoidosis.
        ii. The presence of SOB and nonproductive cough are also manifestations of sarcoidosis.
235. A young man with atraumatic back pain, eye trouble, and painful red lumps on his shins develops bloody diarrhea. What is the point of this question?
    a. To remind you of the extra-intestinal manifestations of inflammatory bowel disease, such as ankylosing spondylitis, uveitis, and erythema nodosum, not to mention kidney stones.
236. Are the nodules of erythema nodosum more often symmetrical or asymmetrical in distribution?
    a. Symmetrical. These nodules are distinctive, bilateral, tender nodules with underlying red or purple shiny patches of skin that develop in a symmetrical distribution along the shins, arms, thighs, calves, and buttocks.
237. Is there an effective treatment for erythema nodosum?
    a. No. The disease usually lasts several weeks, but the pain associated with the tender lesions can be relieved with non-steroidal anti-inflammatory agents.
238. **What is most confused with erythema nodosume?**
    a. Cellulitis
239. **Fungal infection tinea**
    a. Uniform throughout
240. **Randomized control**
    a. I - Randomized double -blind controlled, systematic/meta analysis
    b. II - Cohort
    c. III – Case
    d. IV - animal research, expert opinion
241. **Os calcaneus secondarius**
    a. Accessory bone: **Dorsal, anterior process of calcaneus**
242. **Berndt Hardy**
    a. Stage 1 – nondisplaced compression of talar dome
    b. Stage 2 – partially detached osteochondral lesion
    c. Stage 3 – completely detached, nondisplaced osteochondral lesion
    d. Stage 4 – completely detached, displaced osteochondral lesion

243. **Stewart 1**
    a. Jones
    b. 5th metatarsal base fracture classification
        i. Type 1 – extra-articular fracture at metaphyseal-diaphyseal junction (True Jones fracture)
        ii. Type 2 – intra-articular avulsion fracture of 5th metatarsal base
        iii. Type 3 – extra-articular avulsion fracture of styloid process of 5th metatarsal base
        iv. Type 4 – intra-articular comminuted fracture of 5th metatarsal base
        v. Type 5 – extra-articular avulsion of epiphysis in children
244. **PAB injury**
    a. Deltoid rupture
245. **55 y/o tibial lesion:**
    a. Pain = hyperthyroidism
    b. **Hyperthyroidism** is characterized by:
        i. A general catabolic state of the body, resulting in loss of connective tissue as well as increased bone turnover.
        ii. Osteoporosis is a common initial finding.
        iii. Other findings include accelerated skeletal maturation and myopathy.
    c. Clinical features of hyperthyroidism include warm moist skin, lid lag, and fine tremors
246. **Pyoderma gangrenosum**
    a. Nodule or pustule that breaks down, raised, inflammatory border, boggy, necrotic base, pearly, rolls in, punched out, purulent drainage with hemorrhagic exudate, dusky red/PURPLE border.
    b. Associated with inflammatory disorders (Crohn's, IBS, UC, RA). Huge deep ulcers that are due to auto-immune diseases
    c. Histo – see mostly neutrophils.
    d. Tx – oral steroids, sulfa drugs, cyclosporine.
    e. PAPA syndrome –Pyogenic Arthritis, Pyoderma, cystic Acne
247. Pyoderma gangrenosum is most often found in individuals with which of the following diseases?
    a. Ulcerative colitis
    b. Sarcoidosis
    c. Lupus erythematosus
    d. Psoriasis
248. **TSH**
    a. The thyroid gland is located in the base of the neck on both sides of the lower part of the larynx and upper part of the trachea.
    b. The gland produces TH in response to **stimulation by TSH from the pituitary gland**.
    c. TH acts throughout the body to regulate metabolism and increase iodine (essential trace element used in the production of ***thyroxine/ triiodothyronine)***
    d. TSH is the best marker for testing for thyroid disease
    e. Hyperthyroidism (Grave's Disease)
        i. Autoimmune activation of TSH receptors
        ii. Symptoms: Weight loss, Increased appetite, Nervousness, Goiter, HTN, opthalmapathy and dermopathy. Restlessness , Heat intolerance , Increased sweating , Fatigue , Frequent bowel movements , Menstrual irregularities
        iii. TSH is low, T3 and T4 is high
249. **Subungal fibroma**
    a. Tuberous sclerosis
        i. A disorder characterized by periungual fibromas, mental retardation, seizures, and adenoma sebaceum
250. **Beau lines**
    a. Infection with medial / lateral transverse line
251. **Pulmonary Embolism**
    a. Presents with **sudden-onset dyspnea, pleuritic chest pain, low-grade fever,** cough, and, rarely, hemoptysis.
    b. **Hypoxia and hypocarbia** with resulting respiratory alkalosis.
    c. Tachypnea, tachycardia, and fever.
    d. Exam may reveal a loud P2 and prominent jugular = waves with right heart failure.
252. **When diagnosing a pulmonary embolism, the PO2**
    a. 78%
    b. Respiratory alkalosis (2° hyperventilation) with PO2 < 80 mmHg.
253. V/Q scan:
    a. May reveal segmental areas of mismatch. Results are reported with a designated probability of pulmonary embolism (low, indeterminate, or high) and are interpreted in combination with clinical suspicion

254. Gold standard for diagnosing PE: Angiography
255. Vircow's Triad (DVT/PE):
    a. Endothelial damage
    b. Venous stasis
    c. Hypercoagulability (increase activation of clotting factors).
256. **Morton's extension is indicated for:**
    a. Hallux limitus
257. **What is the proper brace for a person with PTTD?**
    a. Richie brace
258. **What is the proper bracing for a dropfoot?**
    a. AFO (ankle foot orthosis)
259. **PTTD orthotic recommendations:**
    a. Medial heel skive, deep heel cup
260. **Fast recovery**
    a. Thiopental
        i. Most commonly used induction agent
        ii. Ultra-short acting Barbiturate
        iii. Extravascular injection can produce tissue necrosis/arterial injection à spasm
        iv. Induction dose 3-6mg/kg = Onset <30s= Duration 5-10min
261. **Amnesia**
    a. Midazolam (Versed)
        i. Short acting Benzodiazepine
        ii. Watch for hypotension, mental and motor defects
        iii. onset = 3-5 min, half life = 1.2-12.3 hrs
        iv. sedative dose = 2.5-7.5mg
        v. lasts 30-40 min
262. **Bronchopulmonary?**
    a. Propofol (Answer)
        i. Neuroleptic drug
        ii. Cleared by liver at a much faster rate, time from emergence to full recovery following induction dose is more rapid thanany other IV anesthetic agent
        iii. Induction dose 1.5-2.5mg/kg = Onset 15-45s = Duration 5-10min
263. **Renal failure, liver failure**
    a. Demerol (Mepiridine)
        i. Narcotic, analgesic
            1. SEs: Hypotension, respiratory depression, nausea, urinary retention, constipation
            2. Contraindicated in head trauma cuz opioids can cause increase in intracranial pressure
            ii. 25mg increments IV
        iii. 1-1.8mg/kg up to 150mg IM/PO q3-4h. Tabs 50, 100, syrup 50mg/5mL)
        iv. Class II drug
        v. Mepergan Fortis (Meperidine/Phenergan 50/25) I tab po q4-6h, Class II drug
            1. Phenergan is an antiemetic and potentiates Demerol
264. **Permetherin** = atopic dermatitis (not sure what this was about but Permethrin topical is used to treat scabies and shampoo for lice)
265. **Polyester**
    a. Mersilene suture (multifilament)
    b. Ethibond suture (braided)
    c. Steristrips
266. **Horizontal mattress suture technique:**
    a. Approximates skin and everts edges
267. **C shaped foot, lateral styloid prominence described what foot deformity?**
    a. Metatarsus adductus
268. **Nasal MRSA**
    a. **Azithro**
    b. Note: MRSA is also treated with bactroban/mupirocin on lips (impetigo)
269. **Bier Block contraindications**
    a. Sickle cell disease, Raynaud's, PVD, and Methaemoglobinaemia
270. **How many mg are in 5 cc of 0.25% Marcaine**
    a. 12.5 mg
    b. 1% = 10 mg/cc; 5cc x 2.5% = 12.5 mg
271. **Erythema Nodosum is associated with which other condition**

a. TB, **sarcoidosis**, IBS, leukemia, lymphoma, rheumatic fever, and infection

272. **Definition of meta analysis**
    a. In statistics, **meta-analysis** comprises statistical methods for contrasting and combining results from different studies in the hope of identifying patterns among study results, sources of disagreement among those results, or other interesting relationships that may come to light in the context of multiple studies
    b. To establish statistical significance with studies that have conflicting results
    c. To develop a more correct estimate of effect magnitude
    d. To provide a more complex analysis of harms, safety data, and benefits
    e. To examine subgroups with individual numbers that are not statistically significant

273. **Which is the ideal population study**
    a. Random

274. **Steps for lateral release**
    a. Adductor hallucis tendon
    b. Release of fibular metatarsal-fibular sesamoid ligament and lateral capsule
    c. Tenotomy of the lateral head of the FHB
    d. Excision of the fibular sesamoid

275. **Malignant Hyperthermia treatment and most common symptom**
    a. Tx: Dantrolene
    b. Symptoms: high temperature, muscle rigidity, tachycardia, rhabdomyolysis

276. **Atopic contact dermatitis (allergic contact dermatitis)**
    a. Type IV delayed hypersensitivity reaction
    b. Mediated by Langerhans cells, T lymphocytes and T cell lymphokines, non-protein in nature, soluble à haptens
    c. Usually has a locale, pattern morphology: papules, vesicles, bullae.
    d. Presence of spongiosis = Tzanck smear
    e. The most common allergens: nickel, plants (Rhus genus), preservatives, perfumed, topical medications and occupational agents
    f. Acute eruption:
        i. Usually about 48 hours after exposure
        ii. Linear or geographic edematous red papules à vesicles/bullae when rxn is severe enough
    g. Chronic
        i. Minimal primary lesions with secondary changes à lichenification, pigment changes, hyperkeratosis, excoriation and fissuring
    h. Tx: Identify offending agent
        i. Acute: Systemic corticosteroids (Medrol) and oral antihistamine
        ii. Chronic: Above + topical NSAID that work by inhibiting Calcineurin which is an important mediator of interleukin induction and Tcell activation
    1. Tacrolimus
    2. Pimercrolimus

277. **Systemic lupus erythematosus**
    a. A chronic remitting, relapsing inflammatory and often febrile multisystem disorder of the connective tissue
    b. 15-35 years, W>M (10:1)
    c. Symptoms:
        i. Joint pain is early manifestation in 90%
        ii. Photosensitivity, Malar rash
        iii. Arthralgia, Arthritis (small joints), Myopathies
        iv. Seizures, Psychoses
        v. Alopecia
        vi. Anemia, Thrombocytopenia, Leukopenia
        vii. +ANA
        viii. Pericarditis, pleuritic, Glomerulonephritis, Interstitial lung disease
    d. Autoimmunity Type III: nonspecific antibody against ANA, anti-dsDNA, anti-Smith, anti-Histone antibodies
    e. Causes Libman Sacks Endocarditis (valvular vegetations found on both sides of mitral valve
    f. Drugs that cause lupus: Hydralazine, INH, Phenytoin, Procainamide
    g. Diagnosis: Increased ESR, +ANA, decreased hemoglobin, WBC and platelets
    h. Tx: Systemic steroids, antimalarials (chloroquine), immunosuppressants, avoid sunlight

278. **Symptoms of Multiple sclerosis**
    a. Ataxia, impaired vision, bladder dysfunction
    b. Also, Scanning speech, intension tremor, nystagmus

279. **Name the HLA- B27 diseases (PEAR):**
    a. Psoriatic arthritis
    b. Enteropathic arthritis (Ulcerative colitis, Crohn's disease)

c. Ankylosing spondylitis
d. Reiter's (reactive) arthritis

280. **If the IM angle = 27, which type of procedure is indicated?**
a. Base procedure
281. **Calculate false positives**
a. "# of pt w/o disease testing (+ who tested positive)"/ "Total # w/o disease"
282. **Gold treatment for osteomyelitis**
a. IV antibiotics 6 weeks & surgical debridement
283. **ABCs of emergency**
a. Airway, Breathing, Circulation
284. **Shoe modification for Charcot**
a. Double rocker sole, widen midfoot
285. **Shoe modification for Metatarsus Adductus**
a. **Don't do it, doesn't work**
286. **Propofol**
a. Metabolism: Liver CYP450
b. Contraindication: **Egg allergy**
c. Most commonly used anesthesia
287. **Thiopental**
a. Faster onset and recovery
b. Barbiturate = enhance inhibitory action of GABA receptor
288. **Midazolam**
a. Causes amnesia
b. Flumazenil is used to treat midazolam overdose & reverse sedation.
c. Most commonly used benzodiazepine
289. **Ketamine**
a. Anesthesia; also used to treat bronchospasm (COPD) & CRPS
b. Causes emergence delirium & hallucinations
290. **All of the following are true osteochondrosis, except:**
a. Bowens (superficial SCC)
i. A superficial variant of squamous cell carcinoma that resembles a localized patch of psoriasis, dermatitis, tinea
b. Osteochondrosis (Epiphyseal ischemic necrosis):
i. A disease of the growth or ossification center in children, which begins as a degeneration or necrosis and is followed by regeneration or recalcification
c. True AVN:
i. Legg-Calve-Perthes – Femoral head (most common form) (3-12y, M>F)
ii. Osgood-Schlatter – Tibial tuberosity (10-15y, M>F)
iii. Sever's – Calcaneal apophysis (6-12y, more common in patient's with equinus)
iv. Diaz (talus) – Talar body (trauma)
v. Koehler – Navicular (3-6y, M>F)
vi. Frieberg – metatarsal head (10-18y, F>M)
vii. Assman – Head of 1st metatarsal
viii. Renandier – Tibial sesamoid
ix. Treve's – Fibular sesamoid
x. Blount's dx – medial portion of proximal epiphyseal ossification of center of tibia à bowing of legs (Infantile type: before 6y, early walking and obesity; Adolescent type: 8-15y, trauma, infection)
291. **Symptoms of depression**
a. Major Depressive Disorder
i. Diagnosis requires depressed mood or anhedonia (loss of interest/pleasure) and five or more signs/symptoms from the SIG E CAPS mnemonic for a two-week period.
1. Sleep (hypersomnia or insomnia)
2. Interest (loss of interest or pleasure in activities)
3. Guilt (feelings of worthlessness or inappropriate guilt)
4. Energy (↓) or fatigue
5. Concentration (↓)
6. Appetite (↑ or ↓) or Weight (↑ or ↓)
7. Psychomotor agitation or retardation
8. Suicidal ideation
292. **Hyperthyroid/Hypothyroid : Lab test to order**
a. TSH (T3/T4)

293. **At which view is the Os peroneum best seen**
    a. MO
294. **Mitral Regurgitation*****
    a. Diastolic Murmur
    b. Primarily 2° to rheumatic fever or chordae tendineae rupture after MI.
    c. Patients present with dyspnea, orthopnea, and fatigue.
    d. PE: Holosystolic murmur radiating to axillae.
    e. Dx: Echocardiography demonstrates regurgitant flow; angiography can assess the severity of disease
    f. Antiarrhythmics if necessary (AF is common with LAE; nitrates and diuretics to ↓ preload)
295. **In what stage of RSD is spotty, diffuse osteopenia seen?:**
    a. **Stage II**
    b. Characterized by persistent severe burning pain associated with trophic and vasomotor change; pain out of proportion to inciting injury or event
    c. Sudek's atrophy: post traumatic painful osteoporosis
    d. Most commonly following trauma or disease
    e. Usually localized to site of injury/distrib. of affected nerve, w/ time spreads to entire extremity
    f. Common in patient's with psychiatric problems (depression)
    g. Tx:
        i. Meds: Steroids, tricyclic antidepressants, beta blockers, antiseizure meds
        ii. PT: massage, ROM, US, splinting, contrast baths
        iii. Nerve: TENS, acupuncture, sympathectomy
        iv. Blocks: Peripheral, Bier (Reserpine)
        v. Psycotherapy
    h. Stage 1: Acute (days to weeks)
        i. Constant burning pain (allodynia), hyperalgesia, hyperesthesia, hyperpathia (exaggerated response to pain)
        ii. Localized edema
        iii. Joint stiffness, limitation of motion
        iv. Initially the skin warm, red, dry à then becomes cyanotic, cold, sweaty
        v. Bone scans w/ technetium (99mTc) àincreased uptake; radiographs normal (until 5-6 weeks)
    i. Stage 2: Dystrophic (3-6 months)
        i. Continuous burning, aching pain, allodynia, hyperalgesia, hyperpathia
        ii. Indurated edema
        iii. Skin: cool, pale, discolored, mottled, cyanotic, dystrophic changes: hair growth decreased, nails are brittle/cracked
        iv. Radiographs may shoe spotty/diffuse osteopenia (Sudek's atrophy)
        v. Joints become thickened/contracted, muscle wasting
        vi. Still capable of treatment
    j. Stage 3: Atrophic (>6 mo)
        i. Pain, allodynia, hyperpathia extend proximally, pain may be less severe
        ii. More advanced atrophic skin, nail/soft tissue changes, stretched, smooth, pale, waxy, cyanotic
        iii. Muscle atrophy, particularly interossei; contractures and ankylosing joints
        iv. Radiograph shoe marked spotty or diffuse periarticular demineralization
        v. Poor prognosis
296. **Phonophoresis**
    a. Non invasive way of delivering chemicals through the skin using ultrasound
    b. Actual mechanism is probably via thermal effect and acoustical streaming of the ultrasound
    c. Usually used with topical anesthetics, anti-inflammatories, muscle relaxants
297. **A case of Ankylosing Spondylitis**
    a. A seronegative spondyloarthropathy
    b. A chronic inflammatory arthritis that affects the sacroiliac joint and to a lesser extent the rest of the spine (Lower back or kyphosis)
    c. Early signs: Pain and stiffness
    d. Advanced signs: Poker spine (very stiff, inflexible backbone)
    e. Onset: 15-35 yr; 10:1 M:F
    f. Diagnosis: Increased sed rate, +HLA-B27, + Schoeber's test, X-ray: Abnormal sacroiliac, bamboo spine
    g. Tx: physical therapy and NSAIDS
298. **Osteoarthritis case**
    a. Results from wear and tear on the joints, deteriorated cartilage, subchondral bone becomes sclerotic, polished in process called eburnation.
    b. Asymmetrical noninflammatory arthritis

c. Pain worse at end of day after use. Pain in joint before a change in weather. Loss of flexibility
d. Heberden's nodes: bony protuberances at margins and dorsal surface of DIPJs
e. Bouchard's nodes: bony protuberances at margins and dorsal surface of PIPJs
f. Joints most commonly affected: neck, back, knees, hips, shoulder, 1st MPJ, 1st radiocarpal joint
g. Dx: Subchondral sclerosis, loose bodies, asymmetrical joint space loss, soft tissue normal
h. Tx: ROM exercises, joint replacements, synovial fluid viscosupplements (injected into joint: Synvisc, Hyalagan)

299. **Rheumatoid Arthritis case**

a. Begins as chronic symmetric peripheral polysynovitis with insidious aching and morning stiffness; Pain and swelling worse in the morning and after rest (gets better with motion)
b. Caused by autoimmune response = destruction of articular and periarticular structures
c. Gel phenomenon: after rest, the joints stiffen and become painful to move
d. 3:1 females: males, 20-50y
e. MPJs, Wrists, MCJs and PIPJs most affected
f. Low grade fever, fatigue, weight loss, malaise
g. Rheumatic nodules: benign subQ painless masses at sites subject to trauma
h. Boutonniere's deformity: flexion at PIPJ of finger with hyperextension of DIPJ
i. Swan neck deformity: hyperextension of PIPJ of finger with flexion at DIPJ
j. Baker's cyst (Popliteal cyst): synovial fluid filled cyst in popliteal fossa
k. Felty's syndrome: Rheumatoid arthritis with associated splenomegalia, and pigmented spots on body
l. Pannus transformation: synovium develops into a vasculature granulation tissue that produces inflammatory agents and
immunoglobulin-producing lymphoreticular-like elements that can destroy articular cartilage
m. Dx: Increased SED rate, **+RA factor, normocytic MCV**
n. Xray: fibular/ulnar deviation of phalanges, marginal erosions, increased soft tissue density, early increase in joint space (pannus) = later decrease in joint space, juxta-articular osteopenia (met heads are washed out)
o. Tx: Rest, splints during flare ups, ROM during remission; anti-inflammatory drugs (esp ASA), Corticosteroids (prednisone), Antimalarial drugs (Hydroxychloroquine), gold salts, methotrexate

RA	***OA***
Inflammatory	Non-inflammatory
Pain worse in morning or after rest	Pain worse at end of day
Symmetrical	Asymmetrical
Osteopenia	Sclerosis
Increased soft tissue density	Soft tissue normal
+RA factor	-RA factor

300. **Gout case**

a. Recurrent acute arthritis that affects peripheral joints
b. Build up of monosodium uric acid crystals in and around joints and tendons which may be from excessive breakdown or overproduction of purines
c. Supersaturated hyperuricemic body fluids crystalize causing a sudden onset of severe red, hot, swollen jt
d. Gout classically begins in evening or early morning and tends to occur in previously damages joints
e. Asymmetrical monoarticular arthritis
f. Low grade fever sometimes present
g. More common in men 20:1
h. Joint sparing (chronic gout may be joint destructive)
i. Most common joint: 1st MPJ (Podagra), followed by Lisfranc and heel
j. Crunchy tophi felt in ears, olecranon bursa and Achilles tendon (dissolves in Formalin)
k. X-ray: rat bites, cloud sign, punched out lesions, Martel's sign (overhanging margins)
l. Aspiration: Negatively bifringent yellow needle shaped crystals, when parallel to axis of lens, blue when perpendicular
m. Blood work: Hyperuricemia (>7/5mg/dL) not conclusively diagnostic for gout
n. Tx:
    i. Overproducer of uric acid (metabolic gout)
        1. Uric acid >600mg in a 24 hour urine sample
        2. Cause: genetic enzyme defect or tumor
        3. Tx: Allopurinol (xanthine oxidase inhibitor) 300mg qd
    ii. Underexcreter of uric acid (renal gout)
        1. Uric acid <600mg in 24 hour urine sample
        2. Cause: 1o or 2o kidney problem (lead poisoning, excessive acids – lactic acid or ASA)
        3. Tx: Probenecid 250mg bid x 1wk, then double dose, then increase by 500mg/d every 4wks (not to exceed 2g/d); competes with uric acid for reabsorption from kidneys

iii. Avoid foods and meds that exacerbate gout
1. Organ meat, lard, anchovies, sardines, alcohol (red wine), diuretics

301. **Raynaud's**
a. Paroxysmal vasospasm of digits in response to cold or emotional stress resulting in digital ischemia
b. Heightened vasomotor tone and increased blood viscosity due to increased fibrinogen levels
c. Pulses are present and normal
d. Associated with: primary thromboangiits obliterans, cryoglobulinemia, occupational trauma, collagen vascular disease (lupus),
frostbite, sympathetic hyperactivity, thoracic outlet syndrome
e. White then Blue then Red
f. Associated with CREST (Scleroderma)
g. Tx: Conservative therapy with heparin and bed rest

302. **Gait Patterns**
a. Scissor gait: Cerebral palsy
b. Shuffling gait: Parkinson's
c. Steppage gait: Common peroneal nerve injury

303. **Indium – 111**
a. Detects osteomyelitis
b. Bone scan: Binds to WBCs cytoplasm components
c. Best for infection diagnosis

304. **Which bone tumor resembles Osteomyelitis**
a. Osteosarcoma**, Ewing's sarcoma**, fibrous dysplasia, UBC, ABC

305. **Fallen Fragment Sign is from which tumor [picture above]**
a. Unicameral bone cyst
i. Solitary bone cyst that is painless
ii. Usually asymptomatic unless pathologic fracture occurrence possibly secondary to low grade inflammatory process
iii. Incidence: 1st or 2nd decades (young adults); M>F 2:1
iv. Cystic lesion of foot that occurs in the calcaneus
v. Also occurs at the distal ends of long bones = "fallen fragment sign"
1. No appreciative periosteal reaction
2. Initial treatment may include aspiration and introduction of acetated glucocorticoids (240mg of DepoMedrol)

306. **Ossifications**

307. **Scabies treatment**
a. Permethrin 5% cream

308. **Candida**
a.Pseudohyphae

309. **Which type of fungal nail is associated with HIV**
A**spergillus Flavus** =**Proximal subungual onychomycosis**, Chaetomium species ; Candida

310. **Which area of the body is sterile during surgery?**
a. From the waist up and face down

311. **Post op fever**
a. **Wind**: Atelectasis, aspiration pneumonia, PE (<24 hrs)
b. **Wound**: Surgical site infection, thrombophlebitis (IV site), pain (72 hrs)
c. **Water**: UTI, dehydration, constipation (24-48 hrs)
d. **Walk**: DVT (72 hrs)
e. **Wonder Drugs**: Virtually any drug, but antimicrobials and heparin are MC.

312. **Most common fracture in Lauge Hansen**
a. SER II

313. **Tendons and Tendon transfers**

314. **How would you fixate a fifth digit avulsion fracture**
a. tension band wire

315. **Lisfranc Repair**
    a. ORIF 83% success
    b. 6 weeks immobilization
    c. K wires or screws, plates
    d. Open or percutaneous fixation
316. **Study the cross sectional anatomy on page 530-532 of pocket**
317. **Compartment syndrome**
    a. Excessive pressure in the muscular compartments of leg or foot à leads to ischemia and death of muscle tissue
    b. Resting compartment pressure = 5mmHg.
    c. During exercise = 50mmHg and returns to normal in 5-10 minutes
    d. Anterior and posterior compartments most often involved
    e. 6 P's: Pain out of proportion, paresthesia, pulses present or pulselessness, paralysis, pink, pressure
    f. Etiology: Trauma, surgery, exercise, tight cast, crush injuries, fractures (calcaneal)
    g. Wick Catheter: inserts into muscular compartment and measures pressure
    h. >30mmHg for > 8 hours is diagnostic
    i. Formula: MAP (mean arterial pressure) – Pulse = Delta P …if greater than 30mmHg, then the pressure is normal and there is NO compartment syndrome
        i. **MAP** = [(2 x diastolic)+systolic] / 3
    j. This is a podiatric emergency!
        i. Supportive: remove all dressings, do not elevate limb (increases chance of ischemia), hydrate with IV fluids (protects
        kidneys from excess myoglobin)
        ii. Surgical: Take to OR and perform open fasciotomy right away to prevent tissue necrosis and contractures
            1. Long incisions to depressurize, wound packed open and delayed primary closure in 5-7 days
            2. No tourniquet
        iii. Complications: Volkman's contracture of muscle, muscle ischemia, contracture, renal failure
318. **Chillblains (Pernio)**
    a. Chilblains are itchy and/or tender red or purple bumps that occur as a reaction to cold. The condition is also known as *pernio* or *perniosis*, and is a localized form of vasculitis
    b. Children and the elderly are most often affected
        i. Children: recurrences each winter for a few years are common but complete recovery is usual.
        ii. Elderly: tendency to get worse every year unless precipitating factors are avoided.
    c. Severe cold injury can damage the small bones in the digits, leading to microgeodic disease, swelling and sometimes, bone fracture.
319. **CT image with question that asks: What type of image is this?**
    a. Axial
320. **Timeout definition**
    a. Should be conducted in the OR/procedure room before the procedure/incision.
    b. Should involve the entire operative team, use active communication, be briefly documented, such as in a checklist and should include:
        i. Correct patient identity.
        ii. Correct side and site.
        iii. Agreement on the procedure to be done.
    c. The hospital/organization may, in conjunction with the hospital staff, may create processes that are not specifically addressed in the "time out" to establish a standardized protocol for patient safety.
    d. There should be processes and systems in place for reconciling differences in staff responses during the "time out."
321. **OSHA guidelines (established in 1970)**
    a. Under the OSH Act, employers are responsible for providing a safe and healthful workplace.
    b. OSHA's mission is to assure safe and healthful workplaces by setting and enforcing standards, and by providing training, outreach, education and assistance.
    c. Employers must comply with all applicable OSHA standards.
    d. Employers must also comply with the General Duty Clause of the OSH Act, which requires employers to keep their workplace free of serious recognized hazards.
322. **Max radiation exposure for workers**
    a. Whole body: 5 rem (5000 mrem, 50 mSv) per year
    b. Hand/foot: 50 rem (50,000 mrem, 500 mSv) per year
    c. Lifetime: age x 1 rem
    d. Lens of eye: 15 rem per year

323. **Definition of Equinus**
    a. Less than 10 degrees of dorsiflexion
324. **COPD: Chronic obstructive pulmonary disorder**
    a. Obstructive disease of the airway, due to an increase in resistance to airflow
    b. Characterized by dyspnea (difficulty breathing) and chronic and recurring difficulty breathing
        i. Emphysema – pink puffers
        ii. Chronic bronchitis – blue bloaters
        iii. Asthma – Curshman spirals
        iv. Bronchiectasis

325. **Cervical X ray for RA**
    a. Cerival spine involvement is common in RA (up to 90%) & is more common w/ long standing disease and multiple joint involvement
        i. Significant subluxations will occur in about 32%
    b. Most common presentation is atlantoaxial subluxation C1-C2 instability w/ associated neurologic signs/symptoms & neck pain
326. **Prophylaxis for someone using steroids chronically??**
    a. Patient on steroid therapy
    b. Steroids are used to treat many conditions including asthma, COPD, rheumatoid arthritis, and malignancy. They have an effect on three main areas of importance in the perioperative patient. Suppression of the hypothalamus/pituitary adrenal axis. Poor wound healing. Predisposition to infection.
    c. If a patient has taken more than 7.5 mg/ day of prednisone, then exogenous steroids must be supplied during the perioperative period. Otherwise there could be a resulting hypotension and cardiovascular collapse. For procedures, the regimen of exogenous steroids is: Hydrocortisone IV 100 mg pre-op and 100 mg post-op. Tapering of steroids is only necessary if coverage lasts longer than 3 days.
327. **Ketoacidosis symptoms**
    a. Polyuria
    b. Anorexia
    c. Mental stares
    d. Coma
    e. Kussmaul respirations
    f. Leukocytosis
328. **Which two local is contraindicated in Bier Block**
    a. Indicated: Lidocaine
    b. Contraindicated: Marcaine
329. **Turf Toe mechanism**
    a. Repetitive pressure on hyperextended 1st MPJ
330. **Correct insertion of screw** à **placed by order**
    a. Overdrill, underdrill, countersink, measure, tap, screw
331. **Sutures- which are absorbable (Cryls)**
    a. Vicryl, monocril, Dexon, Maxon, PDS
332. **If a bunionectomy goes Varus, which is the next best procedure**
    a. Reverse Austin
333. **Which of the following nerves do you need to block to get medial and lateral plantar nerves**
    a. PT nerve
334. **What is the best post op treatment?**
    a. Analgesics and NSAIDS
335. **What methods of fixation are used for Achilles Tendon**
    a. Bunnel
    b. Kessler
    c. Krackow
336. End-to-end or mid-tendon ruptures
    a. Irrigate, debride the mop-top ends of tendon
    b. Reapproximate using Bunnel, Kessler or Krackow type of suture using 3-0 or 2-0 Ethibond or other non-absorbable polyester suture
    c. Reinforce site with 1-0 or 2-0 Vicryl in a circumferential stitch.
    d. Irrigate again.
    e. Close paratenon with 3-0 Vicryl, subcutaneous, then skin
337. **What is the treatment for someone who suffered a DVT**
    a. IV Heparin until PTT @ 2-2.5, then Coumadin for 4-6 wks.
338. **Increase in calcaneocuboid angle is indicative of which condition**

a. PTTD

339. **Two questions case on stress fracture…**

340. **Which structures does the needle pass in spinal and epidural anesthesia**

a. Subcutaneous tissue
b. Supraspinous ligament
c. Interspinous ligament
d. Ligamentum flavum
e. Epidural space, dura mater
f. Arachnoid mater

341. **Plantar Fibroma**

342. A plantar fibroma is removed. Two months later the wound has healed, but the three medial digits begin to hyperextend at the metatarsophalangeal joints (MPJ). A possible cause would be the severance of which of the following nerves or muscles?

a. Medial plantar nerve
b. Quadratus plantae
c. Saphenous nerve
d. Flexor digiti minimi

343. In removing the plantar fascia for multiple plantar fibromatosis, special care must be taken with what vital structure?

a. Medial plantar nerve.

344. What conditions may be associated with plantar fibromatosis?

a. Ledderhose disease
    i. The skin is freely moveable over the lesion, occurs as a slowly enlarging nodules on the sole - **most** common on the medial band of the plantar fascia
    ii. Associated w/ Dupuytren's contracture of the palmer fascia or Peyrone's disease, May infiltrate through the plantar fascia!
    iii. Male > females
    iv. Treatment:
        1. Accommodative directed towards off-loading, intralesional injection of triamcinolone acetonide, sclerosing solution; wide surgical excision (margins > 0.5 cm) with partial fasciectomy may be necessary
        2. **Recurrence rate of these lesions is >65%** with recurrence, resection of the entire plantar fascia is recommended
        3. **Make sure you put in a drain to prevent hematoma**
b. Dupuytren contracture
c. Peyronie disease
d. All of the above

345. **Parameters of Kager's Triangle**

a. Calcaneus
b. Achilles
c. FHL

346. **Rowe Calcaneal classification**

a. 1c - distal tip of anterior calcaneus

347. Rowe – Extra-articular fracture of calcaneus

a. Type I
    i. IA: Fracture of the medial tuberosity
    ii. IB: Fracture of the sustentaculum tali
    iii. IC: Fracture of the anterior process – *mc* (avulsion fracture of bifurcate ligament)
b. Type II
    i. IIA: Beak fracture no ACH involvement
    ii. IIB: Avulsion fracture of tendoachilles
c. Type III – Extra-articular oblique fracture of calcaneal body not involving STJ
d. Type IV - Fracture involving STJ w/o joint depression or comminution
e. Type V - Comminuted fracture of STJ w/ central or severe depression

348. Extra articular calcaneal fracture treatment – surgery pull calcaneus tuberosity distally, elevate posterior facet, fill calcaneal defect with bone chips, screw fixation from lateral into sustentaculum tali

349. **Accessory navicular classification (Geist)**

a. Type 1: sesamoid in tendon
b. Type 2: Accesssory navicular articulates with navicular

c. Type 3: Accesssory navicular fused with navicular

350. **Trough and Peak case**
    a. Peak: adjust dose
    b. Trough: adjust interval
351. **Gustillo Classification case**
    a. Stage 1: <1cm wound
    b. Stage 2: >1cm wound
    c. Stage 3: >5cm wound and dirty
        i. A: adequate tissue coverage
        ii. B: periosteal stripping
        iii. C: arterial injury
352. **STA Peg**
    a. Subtalar arthroeresis implant, combo with Evan's calcaneal osteotomy à treat flexible flatfoot
353. **A patient develops hypertension immediately post op. How do you treat him?**
    a. Sodium nitroprusside
    b. Sub-lingual Procardia
    c. IV Furosemide
354. **What is the normal overlap between tibia and fibula on an X-ray**
    a. AP: >6mm or 42%
355. **What structures are in the first ray?**
    a. 1st MT and medial cuneiform
356. **Which is the most common neuropathy in HIV patients**
    a. Distal symmetrical *polyneuropathy* (DSPN)
357. **What type of material would you use for a heel lift?**
    a. ?
358. **Treatment and brace type for ankle sprain**
    a. CAM boot
    b. Physical therapy: contrast baths
359. **Orthotic modification for met primus elevates**
    a. Morton's extension
360. **Type of orthotic for a tarsal coalition**
    a. Pronated orthoses
361. **Name of classification for talar dome lesions:**
    a. Berndt-Hardy
362. **Depolarizing muscle relaxant**
    a. Succinylcholine
        i. Muscle relaxants:
            1. Compounds that block the transmission of neural impulses between motor nerve endings and muscle fibers.
            2. Major site of action at the cholinergic and nicotinic receptors at the motor end plate.
            3. Only effects skeletal muscle and not the smooth muscle of the gut.
        ii. Succinylcholine-2 acetylcholine molecules chemically linked, combines reversibly with post-junctional cholinergicnicotinic receptors opening Na channels.
        iii. Most commonly used to facilitate tracheal intubation
        iv. May cause malignant hypothermia
        v. Onset in 60s, short duration (3-5min):□must be broken down by plasma pseudocholinesterases, will not respond to acytelcholinesterase inhibitors (pyrodistimine, neostigmine, edrophonium) recovery depends on washout of agent from MEP
        vi. Contraindicated in patients with liver disease
363. **Most common bacteria in pneumonia**
    a. Streptococcus *pneumoniae*
364. **Someone with a positive Babinski reflex has a UMN lesion or LMN lesion?**
    a. UMN lesion
365. **What happens if you get stuck with a needle from a patient that has Hepatitis C?**
    a. HCV is Chronic. Eighty percent of patients with HCV infection will develop
366. **How is ratio of contracting Hepatitis C vs HIV and Hepatitis B**
    a. HIV: Hepatitis B: Hepatits C = 1 : 100 : 33
367. **Target lesion case. What could be causing this target lesion?**
    a. Erythema Multiforme is caused by allergic reaction or infection
368. What disease produces erythematous plaques with dusky centers and red borders resembling bull's eye targets?

a. Erythema multiforme. This disease can also produce non-pruritic urticarial lesions, petechiae, vesicles, and bullae.

369. What can cause erythema multiforme?
    a. Viral or bacterial infections, drugs of nearly all classes, and malignancy
370. Erythema multiforme
    a. M> F 40 y/o
    b. Viewed as a hypersensitivity syndrome; therefore, an underlying antigenic stimulus should be suspected 20% of all cases occur in children
    c. Manifests not only in the skin but also in the mucous membranes.
    d. The lesions may be macular, nodose, vesicular or bullous; annular, circinate or iris-shaped
    e. Symptoms may include urticaria**, pruritis** may be persistent,evolution is **rapid,** generally over 12 to 24 hours
    f. Some etiologies include:
        i. Bacterial infections , viral infections
            1. As many as **1/3** of all cases may be associated with the **herpes virus,** but may also occur with the Asian flu, infectious mononucleosis, measles, mumps, coxsackie viruses, echoviruses and poliomyelitis
        ii. Mycotic infections, collagen vascular diseases may occur in association with systemic lupus erythematosis
        iii. Drugs – include **allopurinol, penicillin, salicylates, sulfonamides**, **tetracycline**, **Bactrim, etc**
371. **A case on Arterial Embolism**
    a. What are causes of acute arterial occlusion?
        i. Embolism – detached thrombus, air, fat, or tumor
        ii. Thrombus – occlusion of vessel by plaque or thickened wall
        iii. Extrinsic occlusion – traumatic, blunt, penetrating
372. **A case on ulcer treatment**
    a. Pressure ulcers: Offloading
    b. Venous ulcers:
        i. Compression therapy
            1. ABI 8.0-1.0 Dx: Venous High compression
            2. ABI 0.5-0.8 Dx: Mixed Low compression
            3. ABI <0.5 Dx: Arterial None
        ii. Prominent veins w/o edema
            1. (Very light)à 8-15mmHg
            2. (Light) 16-20mmHg
            3. Venous edema (Class 1) 20-30mmHg
            4. Lipodermatosclerosis (Class 2) 30-40mmHg
            5. Lymphedema (Class 3) Over 40mmHg
    c. Diagnosis Venous Mixed Arterial
    d. Lymphedema
    e. (Class 3) Over 40mmHg
    f. Arterial ulcers: Revascularization
    g. Diabetic ulcers: Offloading, prophylactic surgery
373. **A thigh tourniquet should be inflated**
    a. 200 mmHg above systolic pressure
374. **Neisseria gonorrhea case**
    a. Major cause of septic arthritis in LE
    b. Gonococcal arthritis is an infection, usually of a single joint (in 90% to 95% of cases)
    c. Migratory polyarticular arthritis involving several joints in rapid succession, then settles in 1 or 2
    d. Must culture all mucus membranes, is not usually cultures in synovial fluid analysis
    e. Single joint arthritis follows dissemination of the gonococcal infection and is associated with symptoms of fever, chills, multiple joint aches (arthralgia), and rashes (1-mm to 2-cm red macules).
    f. This episode may end as a single joint becomes infected. The most commonly involved joints are the large joints such as the knee, wrist, and ankle.
    g. Treatment:
        i. Ceftriaxone sodium (Rocephin), 1-2 g IV or IM/day, then cefuorxime (Ceftin), 500 mg PO q12h or ciprofloxacin (Cipro), 500 mg q12h x 7 days plus Doxycycline (Vibramycin, Doryx) 100 mg q12h
375. **Chemical Matrixectomy with 10% Na OH**
    a. For a kid?
    b. Sodium Hydroxide Matrixectomy (1980):
        i. Apply 10% NaOH until capillary coagulation 2 times, 15 seconds each
        ii. 5% Acetic acid used to neutralize

iii. Less drainage, faster healing, low recurrence rate
iv. Same criteria apply as for Phenol-Alcohol procedure

376. **Osteoclast resorption and Calcium/Phosphate relationship**
a. Release of bisphosphonate from a *calcium phosphate* inhibits *osteoclastic resorption*
b. Osteoporosis
i. Prevention with calcium supplementation and vitamin D.
ii. Bisphosphonates (e.g., alendronate, risedronate, ibandronate, zoledronic acid), selective estrogen receptor modulators (e.g., raloxifene), and intranasal calcitonin may be used to prevent resorption and stabilize bone mineral density.
c. Paget's disease
i. Characterized by an ↑ rate of bone turnover
ii. Causes both excessive resorption and excessive formation of bone, leading to a "mosaic" lamellar bone pattern
iii. There is no cure for Paget's disease
iv. Bisphosphonates and calcitonin are used to slow osteoclastic bone resorption; NSAIDs and acetaminophen can be given for arthritis pain.

377. **Acute asthma attack case/symptoms**
a. Recurrent attacks of wheezing dyspnea and cough
b. Initial tx: Inhaled beta-adrenergic agonists

378. **How long you need to wait before you put tourniquet back after 2 hrs?**
a. **15 minutes**

379. **Definition of specificity and sensitivity**
a. Sensitivity
i. True positive
ii. Number of positives tests in people who did have the disease/total with disease present x 100
b. Specificity
i. True negative
ii. Number of negative tests in people who didn't have the disease/number who do not have disease x 100
c. Example: In a test population of 200 persons 75 persons tested positive and 125 tested negative for fungus infection using the KOH test. DTM culture testing revealed that of the 75 testing positive 50 actually had a fungus and 25 did not. In addition, of the 125
testing negative 15 actually had fungus and 110 did not.
i. The False Positives in this scenario is calculated 25/135 x 100 = 18.5/100
ii. The False Negative in this scenario is calculated 15/65 x 100 =23/100
iii. The Sensitivity or True Positive is calculated 50/65 x 100 = 77
iv. The Specificity or True Negative is calculated 110/135 x 100 = 81

380. **How to measure limb length inequality**
a. This is done by palpating the anterior superior iliac spine, and measuring to the tip of the medial malleolus.
b. Repeat measurement 2-3 times consecutively for consistency.
c. If there is asymmetry in their levels, further investigation is necessary

381. **X ray of foot with the question: Where does peroneus longus insert?**
a. Base of first metatarsal bone and first cuneiform

382. **Definition of stochastic**
a. Random chance
b. Having a random probability distribution or pattern that may be analyzed statistically but may not be predicted precisely
c. Stochastic effects are those that occur by chance and consist primarily of cancer and genetic effects.
d. Stochastic effects often show up years after exposure.
e. As the dose to an individual increases, the probability that cancer or a genetic effect will occur also increases.
f. However, at no time, even for high doses, is it certain that cancer or genetic damage will result.

383. **Stochastic and nonstochastic effects**
a. Unlike stochastic effects, nonstochastic effects are characterized by a threshold dose below which they do not occur.
b. Examples of nonstochastic effects include:
i. Erythema (skin reddening), skin and tissue burns, cataract formation, sterility, radiation sickness and death.
ii. Each of these effects differs from the others in that both its threshold dose and the time over which the dose was received cause the effect (i.e. acute vs. chronic exposure).