1. A 43-year-old woman, G2P2002, presents to your office for her annual gynecologic examination. She has no medical problems. Her review of systems reveals headache and fatigue. She is on a low-dose oral contraceptive for control of menorrhagia. As you prepare to perform your pelvic examination, you notice a rash on her left inner thigh.
A. What is the most likely diagnosis?
   a. Discoid lupus
   b. Impetigo
   c. Erythema migrans
   d. Drug reaction

B. What is the next BEST step in the evaluation of this patient?
   a. Bacterial culture for streptococci
   b. ELISA for *Borrelia burgdorferi*
   c. Fluorescent antinuclear antibody test
   d. Determination of eosinophil count

C. Which of the following is the best treatment for this patient?
   a. Doxycycline
   b. Erythromycin
   c. Ceftriaxone
   d. Penicillin

D. Which of the following is the *LEAST* likely complication of this condition?
   a. Atrioventricular block
   b. Aseptic meningitis
   c. Arthritis
   d. Peritonitis
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   b. Impetigo
   c. Erythema migrans
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D. Which of the following is the *LEAST* likely complication of this condition?
   a. Atrioventricular block
   b. Aseptic meningitis
   c. Arthritis
   d. Peritonitis
2. A 27-year-old nulligravid woman requests evaluation because of two "strange spots" on her vulva (see illustration which is used with permission of Dr. Keith Stone, University of Florida). Her sexual partner has noted a similar "spot" on the glans of his penis. On examination, these lesions are shallow-based, painless ulcers.
A. What is the most likely diagnosis?
   a. Syphilis
   b. HIV infection
   c. Chlamydial infection
   d. Molluscum contagiosum

B. Which of the following diagnostic tests is most appropriate in this patient?
   a. Biopsy of lesion
   b. Culture of lesion
   c. Gram stain of lesion
   d. Darkfield microscopy of scraping from lesion
   e. Serology

C. Which of the following treatments is most appropriate for this patient?
   a. Clindamycin
   b. Acyclovir
   c. Interferon
   d. Penicillin
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   e. Serology

C. Which of the following treatments is most appropriate for this patient?
   a. Clindamycin
   b. Acyclovir
   c. Interferon
   d. Penicillin
The characteristic lesion of primary syphilis is the painless chancre. The most appropriate diagnostic test in this stage of the disease is darkfield microscopic examination of a scraping from the chancre. The treatment of choice for primary syphilis is 2.4 million units of intramuscular benzathine penicillin. For patients who are allergic to penicillin, either oral tetracycline (500 mg QID X 14 d) or doxycycline (100 mg BID X 14 d) is an acceptable alternative regimen. Patients with syphilis should be tested for other STDs, particularly HIV infection.
3. Which of the following best characterizes the immunization for hepatitis A?
   a. Live vaccine
   b. Inactivated vaccine
   c. Inactivated toxoid
   d. Hyperimmune globulin

4. Which of the following best characterizes the immunization for varicella?
   a. Live vaccine
   b. Inactivated vaccine
   c. Inactivated toxoid
   d. Hyperimmune globulin
3. Which of the following best characterizes the immunization for hepatitis A?

a. Live vaccine  
b. Inactivated vaccine  
c. Inactivated toxoid  
d. Hyperimmune globulin

4. Which of the following best characterizes the immunization for varicella?

a. Live vaccine  
b. Inactivated vaccine  
c. Inactivated toxoid  
d. Hyperimmune globulin
5. Which of the following best characterizes the immunization for influenza?
   a. Live vaccine
   b. Inactivated vaccine
   c. Inactivated toxoid
   d. Hyperimmune globulin

6. Which of the following best characterizes the immunization for pneumococcal infection?
   a. Live vaccine
   b. Inactivated vaccine
   c. Inactivated toxoid
   d. Hyperimmune globulin
5. Which of the following best characterizes the immunization for influenza?
   a. Live vaccine
   b. Inactivated vaccine
   c. Inactivated toxoid
   d. Hyperimmune globulin

6. Which of the following best characterizes the immunization for pneumococcal infection?
   a. Live vaccine
   b. Inactivated vaccine
   c. Inactivated toxoid
   d. Hyperimmune globulin
7. Which of the following best characterizes the immunization for rubella?

a. Live vaccine  
b. Inactivated vaccine  
c. Inactivated toxoid  
d. Hyperimmune globulin
7. Which of the following best characterizes the immunization for rubella?

a. Live vaccine
b. Inactivated vaccine
c. Inactivated toxoid
d. Hyperimmune globulin
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Recommendations and contraindications</th>
</tr>
</thead>
</table>
| Influenza (given q 1 yr)      | - Adults > 50  
- Adults < 50 with chronic medical problems  
- Health care workers  
- Pregnant women (Oct- May)  
Contraindications:  
- H/o severe anaphylaxis to eggs  
- *mild illness and breastfeeding are not contraindications |
| Pneumococcal                  | - Adults > 65  
- Sickle cell disease, asplenia  
- Chronic disease or immunocompromised  
- Women with high risk pregnancies |
| Tetanus/ diphtheria (booster q 10 y) | - Primary series for everyone  
- Wound management  
- Travel to high risk areas |
| Hep B                         | - Primary series as infant and high risk groups, health care workers |
| Hep A                         | - Travel to endemic areas, chronic liver disease, HCV  
- Contraindications: Safety during pregnancy undetermined |
<table>
<thead>
<tr>
<th>Vaccination</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| **MMR (live vaccine)** | - Primary series as infant  
- Adults born after 1957 with no immunity proof  
- Women of reproductive age without immunity proof  
- Health care workers  
Contraindications: Pregnancy, Immunocompromised |
| **Varicella** | - Primary series as infants  
- Adults with no h/o chickenpox  
- Close contacts of immunocompromised  
Contraindications: Pregnancy, Immunocompromised |
| **Polio** | - Primary series as infants  
Unvaccinated adults traveling to endemic areas |
| **Meningococcus** | - Asplenia  
Travelers to endemic areas, college students, military |
8. A 32-year-old woman, G2P1102, requested evaluation because of a tender, linear mass in her left breast. On physical examination, there was a distinct 6 cm furrow in the outer quadrant of the left breast. At the base of the depression, there was a tender fibrous cord that was 5 mm in diameter. The cord extended from the lower margin of the left axilla toward the left nipple. The overlying skin was erythematous and warm. No nipple discharge or axillary adenopathy was present.
A. Which of the following is the most likely diagnosis?
   a. Paget's disease
   b. Mastitis
   c. Mondor disease
   d. Inflammatory carcinoma

B. Which of the following is the most appropriate next step in management of this patient?
   a. Ultrasound
   b. Mammogram
   c. Biopsy
   d. Anti-inflammatory medication
A. Which of the following is the most likely diagnosis?
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B. Which of the following is the most appropriate next step in management of this patient?
   a. Ultrasound
   b. Mammogram
   c. Biopsy
   d. Anti-inflammatory medication
9. A 24-year-old lactating woman is brought by her neighbor to the emergency room because of a 6 cm contusion on her breast. She reports that her 12 week old newborn bit her during breast feeding. The patient appears distracted and anxious. She has an engorged breast with a tender ecchymosis over the lateral edge several centimeters from the areola. There is no mass. Breast milk is expressed from the nipple. This is the patient's third visit to the ER in the past eight weeks. The first visit was for a bruised hip after a fall, and the most recent one was for abdominal pain.
A. Which of the following is the most likely diagnosis?
   a. Breast carcinoma
   b. Galactocele
   c. Mastitis
   d. Domestic violence

B. What should the physician do prior to the patient's discharge from the ER?
   a. Perform an ultrasound examination of the breast
   b. Ask the patient whether she feels safe in her home
   c. Perform a mammogram
   d. Obtain consultation from the lactation specialist
A. Which of the following is the most likely diagnosis?
   a. Breast carcinoma
   b. Galactocele
   c. Mastitis
   d. Domestic violence

B. What should the physician do prior to the patient's discharge from the ER?
   a. Perform an ultrasound examination of the breast
   b. Ask the patient whether she feels safe in her home
   c. Perform a mammogram
   d. Obtain consultation from the lactation specialist
10. At the time of her annual appointment, a 58-year-old woman expressed concern about worsening stiffness and pain in her distal fingers. She described the pain as worse in the early morning and improved as she continued her daily activities.
A. Which of the following is the most likely diagnosis?
   a. Lupus arthritis
   b. Rheumatoid arthritis
   c. Raynaud's phenomenon
   d. Osteoarthritis

B. Which of the following is the most appropriate treatment for this patient?
   a. Prednisone
   b. Gold
   c. Infliximab
   d. NSAIDs
A. Which of the following is the most likely diagnosis?
   a. Lupus arthritis
   b. Rheumatoid arthritis
   c. Raynaud's phenomenon
   d. Osteoarthritis (Heberden’s nodes)

B. Which of the following is the most appropriate treatment for this patient?
   a. Prednisone
   b. Gold
   c. Infliximab
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<table>
<thead>
<tr>
<th>Type</th>
<th>Pathophysiology</th>
<th>Clinical Pearls</th>
<th>Lab Studies</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheumatoid arthritis</td>
<td>Autoimmune inflammatory process Associated with HLA DR4</td>
<td>Early morning stiffness, symmetric joint swelling, MCP/PIP involvement, characteristic joint deformities, subcutaneous nodules, systemic manifestation s (fever, anemia, pleural effusion, etc)</td>
<td>Rheumatoid factor ESR X-Rays can show joint erosions</td>
<td>Disease-modifying antirheumatologic drugs (Methotrexate, azathioprine, hydroxychloroquine, etc), Glucocorticoids, Biologics (etanercept, infliximab, etc), NSAIDs</td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>Degenerative arthritis, often secondary to acute trauma or wear-and-tear</td>
<td>Often affects older patients, overweight patients. Involves weight-bearing joints, improves with rest</td>
<td>X-Rays can show joint space narrowing, subchondral sclerosis, osteophytes</td>
<td>Weight-loss, Acetaminophen, NSAIDs, joint injections (corticosteroids, hyaluronate), topical therapies, glucosamine, surgery as last resort</td>
</tr>
<tr>
<td>Ankylosing spondylitis</td>
<td>Associated with HLA-B27</td>
<td>Usually affects spine and SI joints, reduced spinal mobility</td>
<td>Lumbar X-Ray shows “bamboo spine”, Pelvic x-Ray shows pseudowidening, erosions, sclerosis of SI joint</td>
<td>Similar to rheumatoid arthritis</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------</td>
<td>------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Septic arthritis</td>
<td>S. aureus, Streptococcus, C. trachomatis, N. gonorrhea</td>
<td>Hot, swollen, painful joint. Decreased ROM, Fevers</td>
<td>CBC, ESR, Joint fluid analysis/culture</td>
<td>Antibiotics NSAIDs</td>
</tr>
<tr>
<td>Gout</td>
<td>Uric acid crystals</td>
<td>Hot, swollen, painful joint, Usually monoarticular, Gout classically involves 1st MTP joint</td>
<td>Elevated uric acid, joint fluid shows negatively birefringent crystals, classic x-ray findings</td>
<td>NSAIDs (indomethacin) or steroids acutely (can also use colchicine but becoming less common), then allopurinol for maintenance</td>
</tr>
<tr>
<td>Pseudogout</td>
<td>Calcium pyrophosphate dehydrate crystals</td>
<td>Similar to gout</td>
<td>Joint fluid shows positively birefringent crystals</td>
<td>NSAIDs, steroids</td>
</tr>
</tbody>
</table>
11. A 65 yo woman w/ history of PVD develops thromboembolic disease in the left leg accompanied by dry gangrene. Laboratory tests show elevated serum lactic acid and arterial pH is 7.27. An ECG in this patient would most likely show:

a. Peaked T waves
b. QT prolongation
c. ST depression
d. T wave inversion
e. U waves
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a. Peaked T waves
b. QT prolongation
c. ST depression
d. T wave inversion
e. U waves
Peaked T waves associated with hyperkalemia $\rightarrow$ arrhythmias

QT prolongation with Hypocalcemia

ST depression/elevation with ischemic events

T wave inversion with ischemic events
Working up Myocardial Infarct

EKG: early peaked T waves, ST elevation, Q waves, ST depression, T wave inversion; Q wave vs. non Q wave (distinguished by cardiac enzymes and EKG findings)

Cardiac enzymes: CK-MB, Troponin I and T → q8h x 3

Treatment: aspirin, beta-blockers, ACE-I, statin, oxygen, nitrates, morphine, heparin, revascularization (tPa vs PTCA), cardiac rehab
12. A 60 yo woman presents to a physician with swelling in her neck. PMH of Rheumatoid arthritis and Sjogren Syndrome. PE shows mild nodular firm, rubbery goiter. Total T4 is 10 mg/dL, and TSH is 1.2 mIU/mL. Antithyroid peroxidase antibody titers are high. Which of the following is the most likely diagnosis?

a. Sick euthyroid syndrome  
b. Graves disease  
c. Hashimoto thyroiditis  
d. Lymphocytic thyroiditis  
e. Subacute thyroiditis
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- b. Graves disease
- c. Hashimoto thyroiditis
- d. Lymphocytic thyroiditis
- e. Subacute thyroiditis
Hypothyroidism

Clinical presentation: fatigue, lethargy, cold intolerance, constipation, bradycardia, hyperlipidemia, delayed DTRs, menorrhagia, dry skin, thinning hair, arthralgias/myalgias

Causes: Hashimoto’s thyroiditis (hypothyroid stage), subacute thyroiditis (hypothyroid stage), drugs (lithium, PTU, methimazole), infiltrative disease (amyloidosis, scleroderma), congenital, iatrogenic (post-ablation or thyroidectomy)

Diagnosis: Send TSH, and if elevated confirm with free T4

Treatment: Levothyroxine
Hyperthyroidism

Decreased TSH →
Send Free T4

- Normal Free T4
  → Suggests Hashimoto’s or subacute thyroiditis in transition from hyper- to hypo-thyroid stage

- Decreased Free T4
  → Pituitary hypothyroidism
  → Hypothalamic hypothyroidism

- Increased Free T4
  → Perform radioactive iodine uptake scan

Increased Uptake
- Subacute thyroiditis
- Hashimoto’s thyroiditis
- Exogenous T3/4 (synthroid)
- Postpartum thyroiditis

Decreased Uptake
- Graves’ disease
- Toxic adenoma
- Multinodular goiter
Clinical presentation: fatigue, nervousness, heat intolerance, diarrhea, weight loss, tachycardia, atrial fibrillation, hypertension, resting tremor, irregular menses, sweating, osteoporosis, proptosis

Treatment: propranolol (symptomatic relief), propylthiouracil, methimazole, radioactive thyroid ablation (more severe cases), thyroidectomy (treats goiter, obstruction)
13. You are trying to evaluate a new PCR test for identification of endocervical gonococcal infection in obstetric patients. You simultaneously perform the new test and a culture for *Neisseria gonorrhoeae* in 500 women. The results of the tests are illustrated below:

<table>
<thead>
<tr>
<th>PCR Test</th>
<th>GC Culture</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>20</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>5</td>
<td>465</td>
<td>470</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>475</td>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

If culture is the definitive test, please calculate (a) the prevalence of GC in this population, (b) the sensitivity and (c) specificity of the PCR test, and the (d) Positive and (e) Negative Predictive Values of the PCR test.
<table>
<thead>
<tr>
<th>PCR Test</th>
<th>GC Culture</th>
<th></th>
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<td>25</td>
<td>475</td>
<td>500</td>
<td></td>
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</tbody>
</table>

If culture is the definitive test, please calculate:

(a) the prevalence of GC in this population

(b) the sensitivity of the PCR test

(c) the specificity of the PCR test

(d) the Positive Predictive Value of the PCR test, and

(e) the Negative Predictive Value of the PCR test.
If culture is the definitive test, please calculate:

(a) the prevalence of GC in this population: 25 of 500 = 5%

(b) the sensitivity of the PCR test: 20 of 25 = 80%

(c) the specificity of the PCR test: 465 of 475 = 98%

(d) the Positive Predictive Value of the PCR test: 20 of 30 = 67%

(e) the Negative Predictive Value of the PCR test: 465 of 470 = 99%
Prevalence: # with disease / # at risk
Incidence: # new cases over time / # at risk
Sensitivity: # with disease who have + test
Specificity: # without disease who have – test
PPV: likelihood a positive test = disease
NPV: likelihood a negative test = no disease
14. A 65yo female smoker with diabetes and hypertension presents with complaints of chest pain on exertion. Exercise stress testing shows reversible ischemia in the anteroseptal portion of the heart after exercising 4 minutes. Cardiac cath reveals 80% stenosis of the left main coronary artery. Which of the following is the most appropriate intervention?

a. Re-examine in 6 months or sooner if symptoms worsen
b. Beta blockers
c. Sublingual nitroglycerin
d. Percutaneous balloon angioplasty
e. Coronary artery bypass grafting
14. A 65yo female smoker with diabetes and hypertension presents with complaints of chest pain on exertion. Exercise stress testing shows reversible ischemia in the anteroseptal portion of the heart after exercising 4 minutes. Cardiac cath reveals 80% stenosis of the left main coronary artery. Which of the following is the most appropriate intervention?

a. Re-examine in 6 months or sooner if symptoms worsen
b. Beta blockers
c. Sublingual nitroglycerin
d. Percutaneous balloon angioplasty
e. Coronary artery bypass grafting
Causes of Hypertension:

- Malignant HTN- retinal hemorrhages/exudate/papilledema, DBP >120
- Essential (1mary): black, salt/etoh use, dyslipidemia, obesity, stress
- Renal Disease: Elev Cr, proteinuria
- OCP use
- Pheochromocytoma- paroxysmal, HA/sweating/palpitations
- Hyperaldosteronism- unexplained hypokalemia
- Renal vascular Disease: Acute rise in bp, atherosclerosis
- Cushings
- Thyroid disease
- OSA- obesity, excessive daytime fatigue
15. An otherwise healthy 22yo woman presents with recurrent severe throbbing headaches triggered by noise and stress. They last several hours and are frequently preceded by visual disturbances, nausea, and vomiting. Aspirin and ibuprofen have not helped. Which of the following is the most appropriate drug treatment during the acute attack?

a. Acetaminophen
b. Calcium-channel antagonists
c. Carbamezapine
d. Ergotamine
e. Prednisone
15. An otherwise healthy 22yo woman presents w/ recurrent severe throbbing headaches triggered by noise and stress. They last several hours and are frequently preceded by visual disturbances, nausea, and vomiting. Aspirin and ibuprofen have not helped. Which of the following is the most appropriate drug treatment during the acute attack?

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c. Carbamezepine
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<table>
<thead>
<tr>
<th>Category</th>
<th>Subtypes</th>
<th>History/Exam Findings</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| Migraine    | Classic (with aura), common (without aura), complicated (prominent neuro symptoms), basilar, hemiplegic, ophthalmoplegic | Unilateral, pulsating, nausea/vomiting, photophobia, phonophobia, scintillations/scotoma | **Acute**: hydration, NSAIDS, triptans, antiemetics (metoclopramide, prochlorperazine)  
**Preventative**: eliminate triggers, TCAs, SSRIs, ß-blockers, Ca-channel blockers, valproate |
<p>| Cluster     | Unilateral, periorbital, stabbing, conjunctival injection, lacrimation, rhinorrhea | 100 % O2, corticosteroids, ergotamines                     |                                                     |
| Tension     | Bilateral, “tight band”                                                   | NSAIDS, tylenol, muscle relaxants, relaxation techniques   |                                                     |
| Rebound     | Daily analgesic use                                                       | Wean off of NSAIDs                                         |                                                     |</p>
<table>
<thead>
<tr>
<th>Secondary</th>
<th>Sinusitis</th>
<th>Sinus tenderness, nasal congestion</th>
<th>Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningitis</td>
<td>Fevers, nuchal rigidity (Kernig’s &amp; Brudzinski’s sign)</td>
<td>Antibiotics</td>
<td></td>
</tr>
<tr>
<td>Temporal arteritis</td>
<td>Temporal artery tenderness, visual changes, jaw claudication, elevated ESR</td>
<td>Steroids</td>
<td></td>
</tr>
<tr>
<td>Pseudotumor cerebri</td>
<td>Papilledema</td>
<td>Serial LPs</td>
<td></td>
</tr>
<tr>
<td>Subarachnoid bleed</td>
<td>Sudden onset of severe headache, nuchal rigidity</td>
<td>Urgent neurosurg c/s</td>
<td></td>
</tr>
<tr>
<td>Intracranial mass</td>
<td>Progressive headache, often worst in the am</td>
<td>Varies</td>
<td></td>
</tr>
</tbody>
</table>
16. A 45yo woman with Type 2 DM has been on a diet and exercise program for 6 months but her blood glucose level is above target levels. Her cholesterol level is elevated at 250 mg/dL. Which of the following drugs would be preferred for her management?

a. Insulin  
b. Metformin  
c. Glyburide  
d. Sitigliptin
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a. Insulin
b. Metformin (lipid lowering and weight loss)
c. Glyburide
d. Sitigliptin
Treatment (Type II):

- Diet and exercise (can often avoid pharmacotherapy with these modifications alone)
- Control risk factors for macrovascular disease
  - BP check at each visit, treat to <130/80
  - Smoking cessation counseling at each visit
  - Annual screening for hyperlipidemia (goal LDL <100)
  - Glycemic control
- Pharmacotherapy: Metformin should be 1st-line therapy in all Type II diabetics. If this does not achieve adequate glycemic control, can add second oral hypoglycemic or go directly to insulin
- Aspirin 81 mg daily for all diabetic patients
- Screen for disease complications:
  - Retinopathy: Optho exam after diagnosis, then yearly
  - Nephropathy: Send urine for microalbumin yearly, start ACE or ARB
  - Neuropathy: Comprehensive (monofilament) foot exam yearly
  - PVD: Check pulses at each visit
  - CAD: Baseline EKG if patient is >35 or with known heart disease.
17. A 40yo patient has an ultrasound exam on her first visit for assessment of risk for fetal aneuploidy. You provide the ultrasound and a 30 minute genetic counseling session. You submit billing codes 76805 (ultrasound pregnant uterus) and 99242 (office/outpatient consult). To bill both procedure and evaluation and management for this visit, you should include which of the following modifiers?

a. --21
b. --25
c. --26
d. --54
e. --62
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a. --21  
b. --25 (2 separate same day E/M services)  
c. --26  
d. --54  
e. --62
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a. --21 (unusually long E/M service)
b. --25 (2 separate same day E/M services)
c. --26 (procedure w/ separate professional component)
d. --54 (surgical care only, not including pre/post)
e. --62 (two surgeons, use 81 or 82 for assistant)
Review Ethics Principles

- **Beneficence** - a practitioner should act in the best interest of the patient.

- **Non-maleficence** - "first, do no harm" (*primum non nocere*).

- **Autonomy** - the patient has the right to refuse or choose their treatment.

- **Justice** - concerns the distribution of scarce health resources, and the decision of who gets what treatment (fairness and equality).

- **Dignity** - the patient (and the person treating the patient) have the right to dignity.

- **Truthfulness** and honesty - the concept of informed consent has increased in importance since the historical events of the Doctors' Trial of the Nuremberg trials and Tuskegee Syphilis Study.
Law suits / legal responsibilities:

1. Duty of care
   1. Begins at offer of services
   2. Can’t refuse in ER, as resident, or emergencies
   3. Telephone contact and email can establish care

2. Breach of duty
   1. Did or Did Not do something you should have
   2. Relies on standard of care

3. Causation
   1. Prove that negligence caused injury

4. Damages
   1. Prove physical, financial, or emotional injury

5. Refusal of treatment
   1. Document thorough explanation of need for treatment and reasons for patient’s refusal and possible outcomes.
Review the Preventive Care guidelines for various age groups – high yield!