Examples of National Medical Licensure Examination, Part 1

Physician's task: Diagnosis & Differential diagnosis

1. A 30-year-old healthy man presents with fever for 4 days and dry cough, dyspnea, right ear pain and diarrhea for 2 days. PE: T 38°C, P 80/min, R 20/min, BP 110/70 mmHg, moderate injected pharynx, mild redness of right tympanic membrane, fine crepitation of right lower lung. CBC: Hct 38%, WBC 15,000/cu.mm. (N 85, L 10, M 5%), platelets 290,000/cu.mm. Chest X-ray: minimal patchy infiltration at both lower lungs.
   What is the most likely diagnosis?
   1. Klebsiella pneumonia
   2. Legionella pneumonia
   3. Mycoplasma pneumonia
   4. Chlamydophilia pneumonia
   5. Streptococcus pneumonia

2. A term female neonate is born to a mother who had no AN3. PE: brachycephaly, upward slant palpebral fissures, flat face, low set ears, bilateral single transverse palmar creases, pansystolic murmur grade III/VI at the 2nd left lower sternal border.
   Which of the following is the most likely genotype of this case?
   1. 45, X
   2. 47, XXX
   3. 47, XX, +13
   4. 47, XX, +18
   5. 47, XX, +21

3. A 45-year-old woman presents with progressive double vision and afternoon laziness for 6 months. PE: T 37°C, BP 110/70 mmHg, P 95 /min, R 30/min, VA 20/20 both eyes. moderate bilateral ptosis, ophthalmoplegias in all directions, motor power grade 5 all extremities, normal sensory and DTR.
   Which of the following is the most likely diagnosis?
   1. Polymyositis
   2. Hypothyroidism
   3. Multiple sclerosis
   4. Myasthenia gravis
   5. Guillain-Barre syndrome

4. A 22-year-old man has a painful right eye for 1 day. He had similar symptoms 1 year ago. He has had episodic back pain and stiffness for 4 years which is relieved by exercise and ibuprofen. His right eye is red and his vision is blurred.
   Which is the most likely cause of his red eye?
   1. Uveitis
   2. Keratitis
   3. Episcleritis
   4. Conjunctivitis
   5. Chorioretinitis

5. A 27-year-old man with a history of heroin dependence presents to the Emergency Department with abdominal pain and vomiting. He appears agitated in mood and has tachycardia and fever and dilated pupils. He admits recent use of cocaine and heroin.
   Which one of the following clinical findings is most helpful in differentiating cocaine intoxication from heroin withdrawal?
   1. Fever
   2. Agitation
   3. Tachycardia
   4. Dilated pupils
   5. Abdominal pain and vomiting

6. A 19-year-old woman has worsening vaginal discharge and bilateral iliac fossa pain for 3 days. Her vaginal discharge is foul smelling and she has dyspareunia. She is feverish and feels unwell. Her temperature is. 39.0°C
   Which combination of organisms are most likely to cause these symptoms?
   1. *Candida albicans* and *Gardnerella vaginalis*
   2. *Chlamydia trachomatis* and *Candida albicans*
   3. *Trichomonas vaginalis* and *Candida albicans*
   4. *Neisseria gonorrhoeae* and *Gardnerella vaginalis*
   5. *Neisseria gonorrhoeae* and *Chlamydia trachomatis*

Physician's task: Laboratory & diagnostic studies

7. A 60-year-old woman presents with fatigue for 1 month. PE: T 37°C, P 100/min, R 20/min, pallor, no jaundice, petechiae and purpuric spots on both legs, no hepatosplenomegaly. CBC: Hb 6.5 g/dl, Hct 20%, MCV 102 fL, WBC 3,500 /cu.mm. (N 27, L 65, M 8%) platelet 15,000/ cu.mm., Reticulocyte count 0.5%
   Which of the following is the most proper investigation?
   1. Coagulogram
   2. Vitamin B12 level
   3. Bone marrow study
   4. Antinuclear antibody
   5. Peripheral blood flow cytometry

8. A 65-year-old woman presents with fatigue, anorexia and 5-kg weight loss for 3 months. Her underlying is chronic knee pain for years. PE: obese, moon face, acanthosis nigricans. Fasting plasma glucose 60, BUN 10, Cr 0.8 mg/dL, Na 122, K 5.1, Cl 90, HCO_3 22 mmol/L.
   Which of the following is the most proper investigation?
   1. Thyroid function test
   2. Morning cortisol level
   3. Serum aldosterone level
   4. Fractional excretion of Na
   5. Dexamethasone suppression test

9. A 39-year-old man, underlying DM and hypertension, presents with sudden onset of epigastrium pain for 4 hours. PE: T 38.5°C, P 130 /min, R 24 /min, BP 90/60 mmHg, generalized guarding and tenderness at epigastrium, decreased bowel sound.
   What is the most proper investigation?
   1. CT abdomen
   2. Serum amylase
   3. Echocardiography
   4. Acute abdomen series
   5. Abdominal ultrasonography

10. A 60 years old woman presents right knee pain for 2 days. PE: T 39°C, swelling, warmth and marked tenderness at right knee joint.

What is the most proper investigation for the diagnosis?

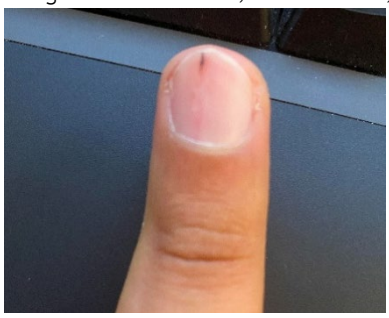
1. Complete blood count
2. Serum uric acid
3. Plain radiography
4. Ultrasonography
5. Synovial fluid analysis

11. A 45-year-old woman presents with sudden onset dyspnea, pleuritic chest pain, and tachycardi1. She has a history of recent orthopedic surgery. Her oxygen saturation is 88% on room air.

Which of the following is the most appropriate initial diagnostic test?

1. ECG
2. Chest X-ray
3. D-dimer assay
4. Ventilation-perfusion scan
5. CT pulmonary angiography

12. A 30-year-old man with a history of intravenous drug use presents with 2 weeks of fever and fatigue. PE: T 38°C, P 110/min, BP 120/80 mmHg, cardiac murmur. Nail appearance: as figure.



What is the most appropriate investigation of the diagnosis?

1. ECG
2. ASO titer
3. Chest X-ray
4. Blood culture
5. C-reactive protein

Physician's task: Treatment (Pharmacotherapy/Clinical intervention)

13. A 30-year-old woman presents with bleeding per anus for 5 days. She has had passed fresh blood after defecation on-and-off for 1 year. Proctoscopy: a small venous dilatation lump with active bleeding located above the dentate line.
    Which of the following is the most appropriate management?
    1. Gel foam packing
    2. Steroid suppository
    3. Bulk-forming laxative
    4. Rubber band ligation
    5. Hemorrhoidectomy

14. A 30-year-old primigravid, GA 38 weeks, presents with amniotic fluid leakage with labor pain. PE: Fundal height 3/4 above umbilicus, longitudinal lie, cephalic presentation, estimated fetal weight 2800-3000 g. PV: adequate pelvimetry, labour progression as table

Time	Cervical dilatation (cm)	Effacement (%)	Station	Membranes	Uterine contraction (I,D, intensity)	FHS (bpm)
On admission	4	100	-1	MR	4-5 min, 40-50 sec, mild to moderate	140-150
2 hr. later	4	100	-1	MR	3-4 min, 40-50 sec, mild to moderate	140-150

    Which of the following is the most appropriate management?
    1. Observation
    2. Fetal monitoring
    3. Oxytocin infusion
    4. Caesarean section
    5. Pain control medication

15. An 82-year-old woman with mild dementia and hypertension is prescribed diazepam for insomnia.
    Which of the following best describes this prescribing decision?
    1. Safe if used for less than 2 weeks
    2. Potentially inappropriate due to fall risk
    3. Appropriate due to age-related insomnia
    4. Rational due to low cost and availability
    5. Preferred over non-benzodiazepine hypnotics

16. A 74-year-old woman presents with tearing and irritation on her both eyes for months. She has had localized redness on the nasal side of her both eyes off and on. PE both eyes: VA 20/25, no conjunctival injection, the pink triangular fibrovascular tissue on the nasal side, extend 1 mm. from limbus into the cornea.
    Which of the following is the most appropriate management?
        1. Artificial tear
        2. Dex-oph eye drop
        3. Diclofenac eye drop
        4. Polymyxin eye drop
        5. Excision of the fibrovascular membrane

17. A healthy 4-year-old boy has history of contact with chickenpox patient last 2 days. He refuses history of chickenpox illness and was received only 1 dose of varicella vaccine when he was 1 year old.
    What is the appropriate management for preventing of varicella transmission?
        1. Second dose of varicella vaccine
        2. Varicella zoster immunoglobulin
        3. Varicella zoster immunoglobulin + second dose of varicella vaccine
        4. Varicella vaccine 2 doses, 1 month apart
        5. Giving acyclovir when he develops rash

18. A 58-year-old male with a history of hypertension and type 2 diabetes presents for routine follow-up. His blood pressure is 152/96 mmHg. He is currently on amlodipine 10 mg daily. His labs show an eGFR of 65 mL/min/1.73m² and potassium of 4.5 mmol/L.
    Which of the following is the most appropriate next step in pharmacotherapy?
        1. Add clonidine
        2. Add enalapril
        3. Switch to atenolol
        4. Add hydrochlorothiazide
        5. Increase amlodipine dosage

19. A 12-year-old girl with moderate persistent asthma is prescribed montelukast as part of her maintenance therapy.

What is the mechanism of action of this drug?

1. Inhibits phosphodiesterase-4
2. Blocks histamine H1 receptors
3. Inhibits mast cell degranulation
4. Stimulates β2-adrenergic receptors
5. Antagonizes leukotriene D4 receptors

20. A 22-year-old man with a bee sting allergy develops generalized urticaria, throat tightness, and hypotension 10 minutes after being stung. He is conscious and breathing but has stridor and low oxygen saturation.

What is the most appropriate route and rationale for adrenaline administration in this scenario?

1. Inhalation for direct airway effect
2. Oral administration to avoid invasive procedures
3. Subcutaneous injection to minimize tissue irritation
4. Intramuscular injection for rapid absorption and safety
5. Intravenous bolus to ensure rapid systemic distribution

21. A healthy boy is born by vaginal delivery at 40 weeks gestation. His mother had confirmed acute hepatitis B during this pregnancy.

Which preventative intervention should be given immediately to the baby?

1. Hepatitis B immunoglobulin
2. Full course of hepatitis B vaccine
3. Hepatitis B vaccine as a single dose
4. Confirm hepatitis B status of baby as first step
5. Full course of hepatitis B vaccine and hepatitis B immunoglobulin

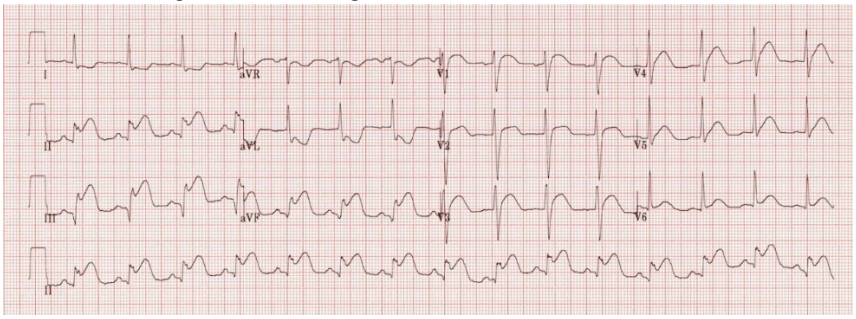
Physician's task: Pathogenesis/pathophysiology/mechanism of disease

22. A 10-year-old boy presents with recurrent wheezing and dyspnea, especially at night. His symptoms are triggered by dust and exercise.
    Which of the following mechanisms best explains his disease?
    1. Loss of surfactant production
    2. Fibrosis of interalveolar septa
    3. Neutrophil-mediated alveolar damage
    4. Autoimmune destruction of airway epithelium
    5. Mast cell degranulation and airway hyperresponsiveness

23. A 50-year-old woman presents with multiple joints pain, involving wrists, hands, elbows and knees for 2 months. She reports morning stiffness lasting a few hours and notices swelling of his affected joints. PE: swelling and tenderness at all MCPs, PIPs joints and wrists, positive Ballottement at both knees, a 1-cm rubbery nodule at right elbow. Lab results: rheumatoid factor (+), anti-CCP (+).
    Which mechanism underlies her disease?
    1. Deposition of uric acid crystals
    2. Antibody-mediated destruction of cartilage surface
    3. Osteophyte formation due to cartilage wear and tear
    4. Chondrocalcinosis from calcium pyrophosphate deposition
    5. Type III and type IV hypersensitivity with pannus formation

24. A 45-year-old man presents with epigastric pain relieved by meals. Biopsy of gastric mucosa reveals chronic gastritis with curved gram-negative bacilli.
    Which mechanism best explains his disease?
    1. Autoimmune destruction of parietal cells
    2. Reduced mucus production due to bile reflux
    3. NSAID-induced inhibition of prostaglandin synthesis
    4. Zollinger-Ellison syndrome with gastrin hypersecretion
    5. *Helicobacter pylori*-induced increase in gastric acid secretion

25. A 60-year-old man presents with severe substernal chest pain radiating to the left arm. An electrocardiogram shows figure.



Which of following coronary arteries is most likely occluded?

1. Right coronary artery
2. Left main coronary artery
3. Left circumflex coronary artery
4. Left anterior descending artery
5. Diagonal branch of coronary artery

26. A 40-year-old woman presents with 1-month history of fatigu5. PE: moderate pallor, no jaundice, otherwise normal. CBC: Hct 21%, WBC 7,500 /cu.mm (N 68, L 24, E 3, M 5%), platelet count 400,000/cu.mm, MCV 70 fL, reticulocyte count 1%.

Which pathophysiologic process best explains this anemia?

1. Chronic kidney disease
2. Bone marrow infiltration
3. Impaired DNA synthesis
4. Increased RBC destruction
5. Defective hemoglobin production

27. A pregnant woman at 18 weeks gestation undergoes a routine ultrasound that reveals a fetus with anencephaly. She admits to poor dietary habits and no prenatal vitamin us5.

Which nutrient deficiency is most strongly associated with this condition?

1. Zinc
2. Iron
3. Folic acid
4. Vitamin D
5. Vitamin B12

28. A 7-year-old boy presents with generalized edem1. Urinalysis: 4+ proteinuria, RBC 0-1, WBC 0-1/HPF, microscopic finding as figur5. Lab: albumin 2.0 g/dL, cholesterol 300 mg/dL.

What is the pathogenesis of his condition?

1. Amyloid deposition
2. Ischemic damage to glomeruli
3. Immune complex deposition in mesangium
4. Autoantibody attack on basement membrane
5. Podocyte injury and effacement of foot processes

29. A 45-year-old man with a history of xanthomas and premature coronary artery disease is found to have markedly elevated LDL cholesterol. Genetic testing reveals a mutation in the LDL receptor gene.

What is the most likely mechanism underlying this patient's condition?

1. Increased synthesis of HDL particles
2. Increased hepatic uptake of LDL particles
3. Enhanced conversion of cholesterol to bile acids
4. Impaired endocytosis of LDL particles by hepatocytes
5. Decreased activity of HMG-CoA reductase

30. A 70-year-old woman has pain in her left thigh and calf on walking for 8 weeks. The pain is relieved with rest. She has a 40 pack-year smoking history. Her left popliteal and pedal pulses are not palpable.

Which is the most likely site of arterial pathology?

1. Internal Iliac
2. External Iliac
3. Dorsalis Pedis
4. Anterior Tibial
5. Profunda Femoris

31. A 30-year-old man presents with high fever and cough with rusty sputum. Chest auscultation reveals bronchial breath sound and fine crepitation at right lower lung area. Chest X-ray shows lobar consolidation, right lower lobe.
Which histopathologic stage of pneumonia is most likely found in this situation?
    1. Resolution
    2. Congestion
    3. Organization
    4. Red hepatization
    5. Gray hepatization

32. A 50-year-old man suddenly stands up after lying down for a long period. He feels dizzy for a few seconds before recovering.
Which of the following mechanisms prevents prolonged hypotension in this situation?
    1. Release of atrial natriuretic peptide
    2. Decreased sympathetic discharge to arterioles
    3. Increased renal excretion of sodium
    4. Increased parasympathetic discharge to the heart
    5. Baroreceptor-mediated increase in heart rate and vasoconstriction

33. A 5-year-old girl with recurrent bacterial infections has normal lymphocyte count but low serum Ig levels. Lymph node biopsy shows absent germinal centers.
Which of the following cells is defective?
    1. NK cells $CD8^+$
    2. Macrophages
    3. T lymphocytes
    4. B lymphocytes
    5. Helper T lymphocytes

34. A 55-year-old man with poorly controlled diabetes presents with fatigue and weight loss.
Lab: fasting glucose 280 mg/dL, HbA1c 9.5%.
Which of the following best explains his elevated HbA1c?
    1. Compensated erythropoiesis
    2. Increased breakdown of hemoglobin
    3. Oxidation of hemoglobin by free radicals
    4. Nonenzymatic glycosylation of hemoglobin
    5. Enzymatic addition of glucose to hemoglobin

35. A 3-year-old boy presents with pallor and growth retardation. PE: markedly pale, mild icteric sclera, enlarged liver and spleen. RBC morphology: hypochromic microcytic anemia, anisopoikilocytosis, target cells on smear. Hemoglobin typing: A_2F.
What is the expected pattern of inheritance?
    1. Multifactorial
    2. X-linked recessive
    3. X-linked dominant
    4. Autosomal recessive
    5. Autosomal dominant

Physician's task: Prognosis, risk factor, outcome

36. A 55-year-old man with a history of ulcerative colitis presents with rectal bleeding and weight loss. Colonoscopy shows a mass in the sigmoid colon.
Which of the following is the strongest risk factor for colorectal carcinoma in this patient?
    1. Obesity
    2. Smoking
    3. High red meat diet
    4. Chronic ulcerative colitis
    5. Family history of colon cancer

37. A 72-year-old hypertensive man presents with left-sided weakness and slurred speech. CT brain: right MCA ischemic stroke.
Which factor is most predictive of long-term functional outcome?
    1. Age of the patient
    2. Size of infarct on CT
    3. Presence of atrial fibrillation
    4. Blood pressure on admission
    5. Initial neurologic deficit severity

38. A 52-year-old woman noticed a firm, non-tender lump in her left breast during self-examination. She has observed slight dimpling of the skin over the lump. No pain, nipple discharge or systemic symptoms. PE: palpable mass in the upper outer quadrant of the left breast. Core needle biopsy confirms invasive ductal carcinoma of the breast.
Which factor is the most important predictor of prognosis?
    1. Tumor size
    2. Tumor grade
    3. HER2/neu status
    4. Estrogen receptor positivity
    5. Axillary lymph node involvement

39. A 68-year-old man with a chronic cough for six months presents with declining exercise tolerance. He has a 40-pack-year smoking history. His vital signs are stable, and chest examination reveals barrel shape with wheezing bilaterally.
Which of the following best correlates with prognosis in this patient's condition?
    1. Frequency of cough
    2. Degree of hypoxemia
    3. Presence of wheezing on exam
    4. Number of pack-years smoked
    5. Extent of emphysematous changes on CXR

40. A 34-year-old woman presents with postcoital bleeding. Pap smear shows high-grade squamous intraepithelial lesion.
Which of the following is the strongest risk factor for cervical lesion?
    1. Multiparity
    2. Cigarette smoking
    3. Early onset of sexual activity
    4. Low socioeconomic status
    5. Infection with HPV 16 and 18