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Міжнародний факультет

Кафедра філософії, біоетики та іноземних мов

ЗАТВЕРДЖУЮ

Проректор з науково-педагогічної роботи

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МЕТОДИЧНІ РЕКОМЕНДАЦІЇ ДО САМОСТІЙНОЇ РОБОТИ ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ З НАВЧАЛЬНОЇ ДИСЦИПЛІНИ

Факультет МЕДИЧНИЙ

Курс ТРЕТІЙ

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Тема № 1: **GREEK-LATIN TERM ELEMENTS IN THE ENGLISH MEDICAL TERMINOLOGY**

Мета: ознайомити здобувачів вищої освіти з греко-латинськими терміноелементами, які використовуються у медичній термінології

Основні поняття: греко-латинські терміноелементи, англійська медична термінологія

І.План

1. Терміноелементи латинського походження

2. Терміноелементи грецького походження

ІІ. Практичні заняття, які виконуватимуться

Exercise 1. Fill in the blanks:

1. Inflammation of the liver is called _____.
2. The word biligenesis means the formation of _____ .
3. A cholelith is a(n) _____ .
4. Choledochotomy is incision of the _____ .
5. Cholecystectomy is removal of the _____ .
6. Hepatomegaly is enlargement of the _____ .
7. Cholangitis is inflammation of a(n) _____ .
8. Hepatosplenomegaly is the simultaneous enlargement of both the _____ and the _____.
9. Pancreatolysis is _____ of the pancreas.
10. Pancreatitis is _____ of the pancreas.

Exercise2.Write words for the following definitions using the word parts provided. Each word part can be used more than once.

-itis -logy -ptosis nephro- gastr- cardio- neuro-

1. Inflammation of the stomach _____
2. Study of the nervous system _____
3. Dropping of the kidney _____
4. Study of the kidney _____
5. Inflammation of a nerve _____
6. Downward displacement of the heart _____

mon(o)- -al dextr(o) end(o) macro cardi cyt -ic ecto micro -ia

1. Pertaining to a very small cell _____
2. A condition in which the heart is outside its normal position _____
3. Pertaining to a cell with a single nucleus _____
4. Condition in which the heart is displaced to the right _____
5. Pertaining to the innermost layer of the heart _____
6. Pertaining to a very large cell _____
7. Condition in which the heart is extremely small _____

Exercise 3. Explain the medical terms analyzing the term elements

Thyroidectomy -
Thyrotomy -
Thyroiditis -
Hypothyroidism -
Hyperthyroidism -
Hemithyroidectomy -

Exercise 4. Write a word that means the opposite of each of the following

1. humidify _____
2. permeable _____
3. heterogeneous _____
4. exotoxin _____
5. microscopic _____
6. hyperventilation _____
7. postsynaptic _____
8. septic _____

Exercise 5. Choose the correct option. Explain your choice by analyzing term elements

1. The presence of abnormally large amounts of fluid in the tissues that results in swelling is called
   a. dilatation ***b. edema***
   b. c. emesis ***d. ptosis***
2. Excessive bleeding from the eye is
   a. ophthalmalgia ***b. ophthalmological***
   c. ophthalmoplasty ***d.ophthalmorrhagia***
3. Herniation of the brain through an opening in the skull is called
   a. craniectomy ***b. craniotomy***
   c. encephalocele ***d. encephalopathy***
4. Which of the following terms means dilation of a blood or lymph vessel?
   a. angioplasty ***b. vasotomy***
   c. vascular ***d. angiectasis***
5. A term that means excessive vomiting is
   a. edema ***b. hyperemesis***
   c. hypoglycemia ***d. hysteria***
6. A term that means pertaining to the eye is
   a. adenic ***b. ophthalmic***
   c. otic ***d. vascular***
7. Excision of a gland is called
   a. adenectomy ***b. appendectomy***
   c. neurectomy ***d. tonsillectomy***
8. *Dermatoplasty* is
   a. any disease of the skin ***b. pertaining to the skin***
   c. skin grafting ***d. the science that studies the skin***
9. An instrument for incising brain tissue is a/an
   a. cerebrotomy ***b. cerebrectomy***
   c. encephalotome ***d. encephalocele***
10. A 78-year-old man who had a blood vessel removed during surgery is likely to have which term documented in his chart?
    a. angiectomy ***b. angiogram***
    b. c. angiotomy ***d. angioscopy***
11. Which of the following terms contains a word part that means yellow?
    a. chloropia ***b. cyanotic***
    c. melancholy ***d. xanthosis***
12. Abnormal, uncontrollable, involuntary movements
    a. bradykinesia ***b. dyskinesia***
    c. kinesiotherapy ***d. tachykinesia***
13. *Cephalometry* is
    a. a headache ***b. an instrument used to measure the head.***

c. measurement of the head ***d. study of the head***

14. A *lipoma* is
a. the breakdown of lipids in digestion ***b. a benign tumor composed of fatty tissue***
c. surgical crushing of a stone ***d. an ectopic pregnancy***

15. *Aphonia* is
a. absence of speech ***b. difficult speech***
c. rapid speech ***d. absence or loss of voice***

16. *Cryptorchidism* means
a. tissue compatibility ***b. undescended testicle***
c. within a vein ***d. without water***

17. A record or tracing of the electrical impulses of the heart is called an
a. electrocardiograph ***b. electrocardiogram***
c. electrocardiography ***d. electrocardiopathy***

18. A term for a large cell, usually restricted to mean an extremely large red blood cell, is
a. erythrocyte ***b. megalocyte***
c. microcyte ***d. phagocyte***

19. A patient who has a stroke usually displays deficits on the other side of the body. For instance, a patient with a right-side stroke has left hemiparesis. Which term best describes the location of the weakness in relation to the area of the stroke?
a. bilateral ***b. contralateral***
c. ipsilateral ***d. unilateral***

20. A woman who has just given birth is considered to be
a. antepartum ***b. postpartum***
c. primigravida ***d. multigravida***

21. Which term means inflammation of the tear sac?
a. dacryolithiasis ***b. dacryocyst***
c. dacryocystitis ***d. lacrimitis***

22. Surgical puncture of the chest wall for aspiration of fluids is called
a. open thoracic surgery ***b. thoracentesis***
c. thoracodynia ***d. thoracoplasty***

23. A term that means tumor of a sweat gland is
a. hematoma ***b. hidradenoma***
c. hydrophobia ***d. omphaloma***

24. You're treating a patient who has a swollen eyelid caused by an infected eyelash. What's the proper term for the eyelid condition?
a. blepheral ***b. blepharitis***
c. blepharoplegia ***d. blepharospasm***

25. A patient has a disease of the fingernails of unknown cause. What's the term that best describes this condition?
a. onychectomy ***b. onychomalacia***
c. onychomycosis ***d. onychopathy***

26. Replacement of bone marrow by fibrous tissue is called
a. fibrosclerosis ***b. myelofibrosis***
c. osteoarthritis ***d. osteofibrosis***

27. The term that means pertaining to a rib and a vertebra is
a. costal ***b. costovertebral***
c. spondylocostal ***d. sternocostal***

28. A condition in which the whole spine is stiffened is called
a. ankylosed spine ***b. kyphosis***
c. scoliosis ***d. spina bifida***

29. A term that means pertaining to the wrist and the fingers is
a. carpophalangeal ***b. metacarpal***

c. metatarsal *d. tarsophalangeal*

30. Which adjective does not pertain to a bone of the arm?
a. costal *b. humeral*
c. radial *d. ulnar*

31. Atelectasis is
a. a collapsed or airless condition of the lungs
b. an acute, contagious respiratory infection
c. chronic dilation of the lungs
d. paroxysmal dyspnea

32. Rhinitis is inflammation of the
a. chest *b. nose*
c. throat *d. voice box*

33. A respiratory condition in which there's discomfort in breathing in any position except sitting erect or standing is
a. apnea *b. bradypnea*
c. orthopnea *d. tachypnea*

34. A 75-year-old woman with a left cerebrovascular accident (stroke) is now unable to speak. You document which term to indicate this deficit?
a. anoxia *b. aphasia*
c. dysphasia *d. dysphonia*

35. Which term means any dry condition?
a. hidrosis *b. ichthyosis*
c. necrosis *d. xerosis*

36. Paralysis affecting like parts on both sides of the body is
a. cerebral palsy *b. diplegia*
c. hemiplegia *d. paraplegia*

37. Which of the following terms means a nervous condition characterized by chronic weakness and fatigue?
a. narcolepsy *b. neurasthenia*
c. neurolysis *d. neurosclerosis*

38. The term for localized dilation of the wall of a cerebral artery is
a. cerebral aneurysm *b. cerebral contusion*
c. epidural hematoma *d. intracerebral hematoma*

39. Severe headache is
a. analgesic *b. cephalgia*
c. cerebral contusion *d. neuralgia*

40. Which term means inflammation of the eyelid?
a. blepharitis *b. ophthalmitis*
c. photophobia *d. ptosis*

41. Gastrocele means herniation of the
a. gallbladder *c. liver*
b. large intestine *d. stomach*

42. Eupepsia means
a. deficient appetite *c. normal digestion*
b. excessive appetite *d. sluggish intestinal action*

43. Inflammation of her gums is
a. cheilitis *c. glossitis*
b. gingivitis *d. stomatitis*

44. The term for painful, burning urination is
a. diuresis *c. nephrolithiasis*
b. dysuria *d. voiding*

45. A condition in which there are degenerative but not inflammatory changes in the

kidneys is called

a. catheterization ***c. nephrosis***
b. nephritis ***d. percutaneous nephrostomy***

46. Pus in the urine is called

a. albuminuria ***c. pyuria***
b. hematuria ***d. uremia***

47. Incision of the kidney to remove a calculus is called

a. nephrectomy ***c. nephrotomy***
b. nephrolithotomy ***d. nephrotripsy***

48. Removal of impurities from the blood is referred to as

a. diuresis ***c. peritoneal dialysis***
b. hemodialysis ***d. renal insufficiency***

49. Gestation means

a. after birth ***c. childbirth***
b. before birth ***d. pregnancy***

50. A woman who has had two live births is referred to as

a. nullipara ***c. tripara***
b. secundipara ***d. unipara***

Список рекомендованої літератури

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Електронні інформаційні ресурси

1. Одеський національний медичний університет: https://onmedu.edu.ua/
2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 2: **ANATOMY. PART I**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології **у** анатомії.
Основні поняття: англійська медична термінологія, анатомічна структура, анатомічна різниця.

I.План

1. Особливості Анатомії як науки.

2. Серце, бронхи, легені та травна система у анатомії.

3.Види кишок в медицині.

II. Практичні заняття, які виконуватимуться

Exercise 1. Read the text.

GROSS ANATOMY

The heart

The heart is a conical hollow muscular organ lying between the lungs in the middle mediastinum and is enclosed in the pericardium. It is placed in the chest behind the sternum and adjoining parts of the costal cartilages, and in the left of the thoracic ***cavity.*** The heart is subdivided by septa into right and left halves, and a constriction subdivides each half of the organ into two cavities: the atrium and the ventricle. The atria are separated from the ventricles by the coronary sulcus (*auriculoventricular groove)*. The interatrial groove, separating the two atria, is scarcely marked on the posterior surface, while anteriorly it is hidden by the pulmonary artery and aorta. The ventricles are separated by two ***grooves***, one of which, the anterior longitudinal sulcus, is situated on the sternocostal surface of the heart, the other posterior longitudinal sulcus, on the diaphragmatic ***surface.***

Right Atrium (*atrium dextrum; right auricle)* is larger than the left, but its walls are thinner. It consists of two parts: a principal cavity, or sinus venarum and the auricula. The **superior vena cava** returns the blood from the upper half of the body, and opens into the upper and back part of the atrium. Its ***opening*** has no valve. The **inferior vena cava** returns the blood from the lower half of the body, and opens into the lowest part of the atrium, near the atrial septum, its orifice is guarded by the valve of the inferior vena cava (*Eustachian valve*). The blood entering the atrium through the superior vena cava is directed toward the atrioventricular orifice.

Right Ventricle (*ventriculus dexter*) is triangular in form, and extends from the right atrium to the apex of the heart. Its posterior wall is formed by the ventricular septum. Its upper and left ***angle*** forms the conus arteriosus, from which the pulmonary artery arises.

Left Atrium (*atrium sinistum; left auricle*) is smaller than the right, but its walls are thicker, it consists of two parts, a principal cavity and an auricula.

Left Ventricle (*ventriculus sinister*) is longer and more conical in shape than the right. The **left atrioventricular opening** (*mitral orifice*) is surrounded by a ***dense*** fibrous ring, covered by the lining membrane of the heart, and is guarded by the bicuspid or mitral valve.The three aortic semilunar valves surround the orifice of the aorta. Opposite the valves, the aorta presents slight dilatations, the aortic sinuses (*sinuses of Valsalva)*.

The bronchus and the lungs.

The Right Bronchus (*bronchus dexter*) is wider, shorter, and more vertical in direction than the left. It is about 2.5 cm. long, and enters the right lung opposite the fifth thoracic vertebra. The azygos vein arches over it from behind.

The Left Bronchus (*bronchus sinister*) is smaller in caliber but longer than the right, 5 cm long. It enters the root of the left lung opposite the sixth thoracic vertebra. It passes beneath the aortic arch, crosses it in front of the esophagus, the thoracic duct, and the descending aorta, and has the left pulmonary artery lying at first above, and then in front of it.

The lungs are the essential organs of ***respiration***; they are two in number, placed one on either side within the thorax, and separated from each other by the heart and other contents of the mediastinum. Each lung is conical in shape, and has an apex, a base, three borders, and two surfaces. **The left lung** is divided into two lobes, an upper and a lower, by **an interlobular fissure**, which extends from the costal to the mediastinal surface of the lung both above and below the hilus. The **right lung** is divided into three lobes, superior, middle, and inferior, by two interlobular fissures.

The digestive tract

The digestive tract consists of the oral cavity, the pharynx, the esophagus, the stomach, the large and the small intestines.

The oral cavity is the 1st part of the digestive tract where the food is cut and ground by the teeth forming a bolus, moistened with saliva and moved into the pharynx.

The esophagus is a flattened muscular tube of 18 to 26 cm from the upper to the lower sphincter that conveys the food bolus to the ***stomach*.** Topographically, there are three distinct regions: cervical, thoracic, and abdominal. Structurally, the esophageal wall is composed of four layers: innermost mucosa, submucosa, muscularis propria, and adventitia. Unlike the remainder of the GI tract, the esophagus has no serosa.

The stomach is a C-shaped organ lying in the left part of the abdomen. The stomach is divided into 5 regions: **The cardia** is the first part of the stomach below the esophagus that contains the cardiac sphincter, helps to prevent stomach contents from going back up into the esophagus. **The fundus** is the rounded area that lies to the left of the cardia and below the diaphragm. **The body** is the largest and main part of the stomach where food is mixed and breaks down. **The**

antrum is the lower part of the stomach that holds the broken-down food until it is ready to be released into the small intestine.

The pylorus connects the stomach to the small intestine. It includes the pyloric sphincter that acts as a valve to control the emptying of chyme into the duodenum. Chyme released from the stomach enters **the small intestine** where digestion and ***absorption*** occur. It consists of the duodenum, jejunum and ileum. **The large intestine** is the terminal part of the alimentary canal. Its function is to finish absorption of nutrients and water, synthesize certain vitamins, form feces, and eliminate ***feces*** from the body.

Exercise 2. Answer the questions to the text:

1.What is localization of the heart?

2.What is the heart constructed of?

3.How are the atria separated from the ventricles?

4.What is the function of the superior vena cava and the inferior vena cava?

5.What blood vessels are not provided with valves?

6.What is the anatomical difference between the right and left bronchi?

7.What is the anatomical structure of the lungs?

8.What is the structural difference between the right and left lung?

9.What is the function of the oral cavity in the process of digetion?

10.What are the topographical regions of esophagus?

11.What is esophageal wall structurally composed of?

12.What regions is the stomach subdivided into?

13.What is the function of the cardia?

14.In what part of the stomach is food mixed and broken down?

Exercise 3. Find synonyms to the underlined words in Exercise 1.

Exercise 4. Find the definitions to the given words:

1. duodenum	a) is about 25 cm long and lies in the left upper and lower quadrants. It extends downward from the left colic flexure, to the pelvic brim, where it becomes continuous with the sigmoid colon.
2. jejunum and ileum	b) is about 13 cm long and lies in the right lower quadrant.
3.large intestine	c) is about 13 cm long and begins in front of the third sacral vertebra as a continuation of the sigmoid colon.
4.cecum	d) is 25 to 38 cm long and begins as a continuation of the

	descending colon in front of the pelvic brim. Below, it becomes continuous with the rectum in front of the third sacral vertebra.
5. ascending colon	e) measure about 6 m long; the upper two fifths of this length make up it.
6. transverse colon	f) is about 38 cm long and extends across the abdomen, occupying the umbilical region. It begins at the right colic flexure below the right lobe of the liver and hangs downward, suspended by the transverse mesocolon from the pancreas.
7. descending colon	g) is situated in the epigastric and umbilical regions and, for purposes of description, is divided into four parts: superior or horizontal, descendens, inferior, ascendens.
8. sigmoid colon	h)is that part of the large intestine that lies below the level of the junction of the ileum with the large intestine.
9. rectum	i) extends from the ileum to the anus. It is divided into the cecum, appendix, ascending colon, transverse colon, descending colon, and sigmoid colon.

Exercise 5. Read the text and correct mistakes in content in the underlined parts of the sentence.

Spleen

In addition to the lymph nodes, the spleen is a major secondary **gastric** organ. It is about **30 cm** (5 in) long and is attached to the lateral border of the stomach via the gastrosplenic ligament. The spleen is a fragile organ **with** a strong capsule, and is dark **brown** due to its extensive vascularization. The spleen is sometimes called the "**cup** of the blood" because of its extensive vascularization and the presence of macrophages and dendritic cells that remove microbes and other materials from the blood, including dying **white** blood cells. The spleen also functions as the location of immune responses to blood-born pathogens.

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Тема № 3: **ANATOMY. PART II**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології **у** анатомії.
Основні поняття: англійська медична термінологія, анатомічна структура, анатомічна різниця.

I.План

1.Тестування за темою Анатомія.

2.Перехід іменника у прикметник.

3.Утворення множини слів латинського походження.

II. Практичні заняття, які виконуватимуться

Exercise 1. Read the tests.
1. A patient has a right-sided fracture in the region of the frontal third of mandible accompanied by a haematoma in the region of chin. It is caused by the injury of the following artery:
A Mental
B Inferior labial
C Lingual
D Facial
E Palatine

2. Children often have heavy nasal breathing resulting from excessive development of lymphoid tissue of pharyngeal mucous membrane. What tonsils growth may cause this effect?
A Tonsilla pharyngea
B Tonsilla palatina
C Tonsilla lingualis
D Tonsilla tubaria
E All above mentioned

3. In course of laparotomy a surgeon revealed gangrenous lesion of descending colon. It was caused by thrombosis of the following artery:
A Sinister colic
B Median colic
C Dexter colic
D Ileocolic
E Superior mesenteric artery

4. As a result of a cold a patient has the abnormal pain and temperature sensitivity of the frontal 2/3 of his tongue. Which nerve must have been damaged?
A Trigeminus
B Sublingual
C Accessory
D Vagus
E Glossopharyngeal

5. A patient with a stab wound of the anterior stomach wall is in surgical care. What formation of abdominal cavity did the stomach contents get into?

A Antegastrial bursa
B Omental bursa
C Hepatic bursa
D Left mesenteric sinus
E Right mesenteric sinus

6. A patient has tissue ischemia below the knee joint accompanied with intermittent claudication. What artery occlusion should be suspected?
A Popliteal artery
B Peroneal artery
C Posterior tibial artery
D Anterior tibial artery
E Proximal part of femoral artery

7. After a trauma of soft tissues in the region of the posterior surface of medial condyle of humerus a patient has got a skin prickle of medial forearm surface. Which of the listed nerves is located in the affected region?
A N.ulnaris
B N.musculocutaneu
C N.dorsalis scapularis
D N.subscapularis
E N.radialis

8. A female patient with a tumour of pancreas has developed mechanic jaundice resulting from compression of a bile-excreting duct. Which duct is compressed?
A Ductus choledochus
B Ductus cysticus
C Ductus hepaticus communis
D Ductus hepaticus dexter
E Ductus hepaticus sinister

9. A 28 year old woman has been diagnosed with extrauterine pregnancy complicated by that fallopian tube rupture. The blood is most likely to penetrate the following peritoneal space:
A Rectouterine
B Vesicouterine
C Right mesenteric sinus
D Left mesenteric sinus
E Intersigmoid sinus

10. Examination of a 2-year-old child revealed physical developmental lag, the child often has pneumonias. The child was diagnosed with nonclosure of ductus arteriosus. Haemodynamics disorder was caused by the intercommunication of the following vessels:
A Aorta and pulmonary trunk
B Pulmonary trunk and pulmonary veins
C Superior cava and aorta
D Superior cava and pulmonary trunk
E Aorta and pulmonary veins

11. Inflammation of the tympanic cavity (purulent otitis media) was complicated by inflammation of mammillary process sockets. What wall of tympanic cavity did the pus penetrate into the sockets through?
A Posterior

B Anterior
C Medial
D Lateral
E Superior

12. It is necessary to take the cerebrospinal fluid from a patient with suspected inflammation of brain tunics. Diagnostic puncture was performed between the arches of the lumbar vertebras. During the puncture the needle went through the following ligament:
A Yellow (flaval)
B Iliolumbar
C Anterior longitudinal
D Posterior longitudinal
E Intertransverse

13. Nowadays about 50 minor bases have been found in the t-RNA structure besides the main four nitrogenous bases. Choose the minor nitrogenous base:
A Dihydrouracil
B Uracil
C Cysteine
D Adenine
E Cytosine

14. A patient operated on complicated appendicitis has the following changes of blood count: erythrocytes - $4{,}0*10^{12}$/l, Hb - 120 g/l, color index - 0,9, leukocytes – $18*10^{9}$/l, basophils - 0, eosinophils - 0, myelocytes - 0, juvenile - 0, stab neutrophils - 20, segmentonuclear neutrophils - 53, lymphocytes - 21, monocytes - 5. How is such nuclear shift of leukocytic formula called?
A Degenerative left shift
B Right shift
C Regenerative left shift
D Hyperregenerative
E Regeneratively-degenerative

15. An old woman was hospitalized with acute pain, edema in the right hip joint; the movements in the joint are limited. Which bone or part of it was broken?
A The neck of the thigh
B The body of the thigh bone
C Condyle of the thigh
D Pubic bone
E Ischial bone

16. A 53-year-old female patient was diagnosed with liver rupture resulting from a blunt abdominal injury. The escaped blood will be assembled in the following anatomic formation:
A Rectouterine pouch
B Vesicouterine pouch
C Right mesenteric sinus
D Omental bursa
E Left mesenteric sinus

17. A patient complains about edemata of legs, skin cyanosis, small ulcers on one side of the lateral condyle. Examination revealed a swelling, enlarged veins, formation of nodes. The pathological process has started in the following vein:
A V. saphena parva

B V. saphena magna
C V. femoralis
D V. profunda femoris
E V. iliaca externa

18. A 70 year old female patient was diagnosed with fracture of left femoral neck accompanied by disruption of ligament of head of femur. The branch of the following artery is damaged:
A Obturator
B Femoral
C External iliac
D Inferior gluteal
E Internal pudendal

19. A woman underwent an operation on account of extrauterine (tubal) pregnancy. In course of the operation the surgeon should ligate the branches of the following arteries:
A Uterine and ovarian
B Superior cystic and ovarian
C Inferior cystic and ovarian
D Uterine and superior cystic
E Uterine and inferior cystic

20. A 6 month old baby ill with bronchitis was taken for an X-ray of chest. Apart of changes associated with bronchi the X-ray film showed a shadow of thymus gland. What might have caused such changes?
A The above-mentioned condition is a normal variant for this age
B It's the effect of bronchitis
C It is caused by abnormal position
D It is caused by thymus inflammation
E It is caused by neoplastic process

Exercise 2. Translate the given word-combinations into Ukrainian.

Right-sided fracture, the following artery, excessive development, pharyngeal mucous membrane, pterygopalatine fossa, spinal cord punction, tympanic cavity, gangrenous lesion, descending colon, affected region, femoral nerve, lumbar vertebrae, omental bursa, tibial artery, mammillary process sockets, synovial sheath, knee-jerk reflex, lingual artery, pudendal artery, gluteal nerve , coronary sulcus.

Exercise 3. Find synonyms to the given words in the tests. (Основна [1, с. 6-15])

Shoulder, obstruction, joint, failure, sample, liquid, membrane, retardation, clot, hemorrhage, foramen, influenza, swelling, intestines, sternum

Exercise 4. Form adjectives from the nouns. ***e.g. lip – labial***

mind –	buttock –	heart –
tongue –	thigh –	stomach –
liver –	palm –	vessel –
shoulder -	neck –	kidney –
loins –	spine –	brain –
nose -	skin –	skull –
groin -	lung –	back of the head -

Exercise 5. Memorize the formation of plural forms of medical terms.

Singular endings	*Plural endings*	*Examples*	
		singular	*plural*
a	ae	vertebr***a***	vertebr***ae***
en	ina	lum***en***	lum***ina***
um	a	sept***um***	sept***a***
us	i	fung***us***	fung***i***
ex, ix	ices	ind***ex***	ind***ices***

In Column A of this table there are nouns relating to medicine. For each of the nouns decide whether the correct plural form is in Column B or Column C and then circle it.
The first question has been done for you as an example.

Column A (singular)	**Column B (plural)**	**Column C (plural)**
bacterium	***bacteria***	bacteriums
nucleus	nucleua	nuclei
alveolus	alveoli	alveolei
trachea	trachei	tracheae
bronchus	bronchi	broncheae
humerus	humeruses	humeri
fungus	fungi	funguses
diagnosis	diagnosises	diagnoses
atrium	atriums	atria
vertebra	vertebrae	vertebras
focus	focuses	focci
bacillus	bacilli	bacilluses
maxilla	maxillas	maxillae
ramus	ramia	rami
coccyx	coccyges	coccae
thorax	thoraxes	thoraces
gingiva	gingivae	gingivas
septum	septae	septa
apex	apecis	apices
coccus	cocci	coccae
foramen	foramina	forameni
streptococcus	streptococci	streptococcae
Stratum - *слой*	strata	stratae
medium	mediums	media
caecum	caeca	caecci
peritoneum	peritoni	peritonea
scapula	scapulae	scapuli

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2.Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 4: **ANATOMY. PART III**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології **у** анатомії.
Основні поняття: англійська медична термінологія, анатомічна структура, анатомічна різниця.

І.План

1.Тестування за темою Анатомія.

2.Синонімія в анатомічній термінології.

ІІ. Практичні заняття, які виконуватимуться

Exercise 1. Read the tests. (Основна [1, с. 23-32])
1 A patient got a craniocerebral trauma that resulted in right-side convergent strabismus. Damage of which craniocerebral nerve caused such consequences?
A n.abducens
B n.facialis
C n.trigeminus
D n.trochlearis
E n.aculomotorius

2 In case of a penetrating wound of the anterior abdominal wall the wound tract went above the lesser curvature of stomach. What peritoneum formation is most likely to be injured?
A Ligamentum hepatogastricum
B Ligamentum gastrocolicum
C Ligamentum hepatoduoduodenale
D Ligamentum hepatorenale
E Ligamentum triangulare sinistrum

3 After a trauma a patient lost ability of elbow extension. This might have been caused by dysfunction of the following main muscle:
A m. triceps brachii
B m. subscapularis
C m. teres major
D m. infraspinatus
E m. levator scapulae

4 While playing a child got a punch in the presternum region. As a result of this trauma an organ located behind the presternum was damaged. Name this organ:
A Thymus
B Thyroid gland
C Heart
D Pericardium
E Larynx

5 A patient complains of acute pain attacks in the right lumbar region. During examination the nephrolithic obturation of the right ureter in the region between its abdominal and pelvic segments has been detected. What anatomical boundary exists between those two segments?
A Linea terminalis
B Linea semilunaris

C Linea arcuata
D Linea transversa
E Linea inguinalis

6 After a craniocerebral trauma a patient lost the ability to execute learned purposeful movements (apraxia). The injury is most likely localized in the following region of the cerebral cortex:
A Gyrus supramarginalis
B Gyrus angularis
C Gyrus paracentralis
D Gyrus lingualis
E Gyrus parahippocampalis

7 A patient got an injury of spinal marrow in a road accident that caused loss of tactile sensation, posture sense, vibration sense. What conduction tracts are damaged?
A Fascicle of Goll and cuneate fascicle
B Anterior spinocerebellar tract
C Rubrospinal tract
D Reticulospinal tract
E Tectospinal tract

8 Examination of a patient revealed hypertrophy and inflammation of lymphoid tissue, edema of mucous membrane between palatine arches (acute tonsillitis). What tonsil is normally situated in this area?
A Tonsilla palatina
B Tonsilla pharyngealis
C Tonsilla tubaria
D Tonsilla lingualis
E -

9 While performing an operation in the area of axillary crease a surgeon has to define an arterial vessel surrounded by fascicles of brachial plexus. What artery is it?
A A.axillaris
B A.vertebralis
C A.transversa colli
D A.profunda brachii
E .subscapularis

10 Examination of a patient with impaired blood coagulation revealed thrombosis of a branch of inferior mesenteric artery. What bowel segment is damaged?
A Colon sigmoideum
B Ileum
C Caecum
D Colon transversum
E Colon ascendens

11 A patient was admitted to the surgical department with inguinal hernia. During the operation the surgeon performs plastic surgery on posterior wall of inguinal canal. What structure forms this wall?
A Transverse fascia
B Aponeurosis of abdominal external oblique muscle
C Inguinal ligament

D Loose inferior edge of transverse abdominal muscle
E Peritoneum

12 In order to prevent massive haemorrhage in the region of oral cavity floor it is required to ligate an artery which is located within Pirogov's triangle. What artery is it?
A Lingual artery
B Superior thyroid artery
C Facial artery
D Ascending pharyngeal artery
E Maxillary artery

13 A man with an injury of the dorsal area of his neck was admitted to the resuscitation department. What muscle occupies this area?
A M.trapezius
B M.sternocleidomastoideus
C M.latissimus dorsi
D M.rhomboideus minor
E M.scalenus anterior

14 A 70 y.o. man has cut an abscess off in the area of mammiform process during shaving. Two days later he was admitted to the hospital with inflammation of arachnoid membranes. How did the infection penetrate into the cavity of skull?
A V.emissariae mastoideae
B V.v.labyrinthi
C V.v.tympanicae
D V.facialis
E V.v.auriculares

15 While palpating mammary gland of a patient a doctor revealed an induration in the form of a node in the inferior medial quadrant. Metastases may extend to the following lymph nodes:
A Parasternal
B Posterior mediastinal
C Profound lateral cervical
D Bronchopulmonary
E Superior diaphragmal

16 A patient got a trauma that caused dysfunction of motor centres regulating activity of head muscles. In what parts of cerebral cortex is the respective centre normally localized?
A Inferior part of precentral gyrus
B Superior part of precentral gyrus
C Supramarginal gyrus
D Superior parietal lobule
E Angular gyrus

17. During an invasive operation the surgeon needs to access the omental bursa of the peritoneal cavity via the omental foramen (foramen of Winslow). What anatomical structure makes up the anterior border of this foramen?
A. Hepatoduodenal ligament
B. Hepatorenal ligament
C. Visceral surface of liver
D. Superior part of duodenum
E. Greater omentum

18 A patient has lost skin sensitivity in the region of the medial surface of his shoulder. This is the result of dysfunction of the following nerve:
A Medial brachial cutaneous nerve
B Medial antebrachial cutaneous nerve
C Radial nerve
D Ulnar nerve
E Axillary nerve

19. A specimen presents an endocrine system organ covered with capsule made of connective tissue. Septa branch off from the capsule inwards and divide the organ into lobules. Each lobule consists of two cell types: neurosecretory pinealocytes (polygonal cells with processes) located in the center and gliacytes (astrocytes) located at the periphery. What organ is represented in this specimen?
A. Epiphysis
B. Pituitary gland
C. Hypothalamus
D. Thyroid gland
E. Adrenal medulla

20 A patient was diagnosed with bartholinitis (inflammation of greater vulvovaginal glands). In which organ of urogenital system are these glands localized?
A Large lips of pudendum
B Small lips of pudendum
C Clitoris
D Vagina
E Uterus

Exercise 2. Translate the word-combinations into Ukranian.

A medical board, tetanic convulsions, umbilical region, lacrimation disorder, femoral hernia, greater omentum, axillary crease, humeral articulation, preterm infant, medulla oblongata, operative intervention, inguinal canal operation, resuscitation department, surgical intervention, nephrolitic obturation, on account of hernia, to reveal an induration, alteration of vocal function of larynx, craniocerebral injury, omental foramen.

Exercise 3. Insert the words from the box into the gaps

alveoli, afferent, fossa ovalis, hepatopancreatic sphincter, endocardium, pulmonary artery, pulmonary vein, esophagus, a bolus, ventricle

1. The main chamber of the heart pumping blood – **Ventricle**
2. The _____ carries deoxygenated blood from the right ventricle to the lungs.
3. The _____ is situated at the lower part of the septum, above and to the left of the orifice of the inferior vena cava.
4. The _____ is a thin, smooth membrane which lines and gives the glistening appearance to the inner surface of the heart.
5. The _____ are lined by a delicate layer of simple squamous epithelium, the cells of which are united at their edges by cement substance.
6. The _____ commences in the pulmonary capillaries, the radicles coalescing into larger branches which run through the substance of the lung, independently of the pulmonary arteries and bronchi.
7. The food is chewed and mixed with the saliva to form _____, which is moved to the pharynx by the tongue.

8. Between swallows the _____ is collapsed but the lumen can distend to approximately 2 cm in the anterior-posterior dimension and up to 3 cm laterally to accommodate a swallowed bolus.
9. The_____regulates the flow of both bile and pancreatic juice from the ampulla into the duodenum.
10. _____neurons transmit sensory signals to the central nervous system from receptors in the body.

Exercise 4. Find synonyms to the given words in the tests.
Hyperemia, limb, examination, groove, giddiness, deafness, disorder, tearing, to injure, to reduce, occlusion, lumen

Exercise 5. Match the terms with their definitions:

1. gland	a) the delicate web (network) of connective tissue that surrounds and supports nerve cells;
2. glia	b) a tissue consisting of one or more layers of closely packed cells covering the external and internal surfaces of the body;
3. layer	c)any of the filaments or elongated cells or structures that are combined in a bundl e of tissue;
4. hyaluronan	d) a cell or organ in man that synthesizes chemical substances and secretes them for the body to use or eliminate, either through a duct or directly into the bloodstream;
5. fiber	e) a thickness of some homogeneous substance, such as a stratum or a coating on a surface;
6. muscle	f) a cell specialized to conduct nerve impulses: consists of a cell body, axon, and dendrites;
7. fibroblast	g) a part of an organism consisting of a large number of cells having a similar structure and function;
8. neuron(e)	h) a tissue composed of bundles of elongated cells capable of contraction and relaxation to produce movement in an organ or part;
9. epithelium	i) a cell in connective tissue which produces collagen and other fibers;
10. tissue	j) is a clear, gooey substance that is naturally produced by your body, it is an anionic, nonsulfated glycosaminoglycan distributed widely throughout connective, epithelial, and neural tissues

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Тема № 5: **BIOLOGY. PART I**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у біології.

Основні поняття: генетичні мутації, генотип, гамета.

І.План

1.Суфіксальний спосіб утворення медичних термінів у біології.

2.Варіанти генетичної мутації.

ІІ. Практичні заняття, які виконуватимуться.

Exercise 1. Fill in the table according to the meaning of the prefixes of the following words:
Contraception, maladherence, misidentify, avascular, contradict, misevaluation, malfunction, antibody, antipsychotic, maladapted, malabsorbed, acellular, malabsorbtion, asexual, misfunctioning.

Not	
Against or opposed, another	
Wrong or bad	
Wrong or bad	
Against or opposite	

Exercise 2. Build up nouns using the most common noun-forming suffixes in English from the following words (sometimes more than one variant is possible):
To effect, to respond, to form, to complete, to destruct, to differ, to combine, to mediate, to grow, to develop, to compose, to defend, to restrict, immune, able, wide, long, conscious, permeable, Darwin, polymorph

1.	-or	
2.	-ent	
3.	-ance, -ence	
4.	-tion	
5.	-ity	
6.	-th	
7.	-ment	
8.	-ness	
9.	-cy	
10.	-ism	

Exercise 3. Form adjectives from the verbs.
To effect, to respond, to complete, to destruct, to differentiate, to combine, to mediate, to develop, to compose, to restrict, to contract, to apply, to circulate.

Exercise 4. Read the text.

Medical biology (Biomedicine) is a field of biology that has practical applications in medicine, health care and laboratory diagnostics. It concerns a wide range of scientific and technological approaches: from an *in vitro diagnostics* to the *in vitro fertilization*, from the molecular mechanisms of a cystic fibrosis to the population dynamics of the HIV, from the understanding molecular interactions to the study of the carcinogenesis, from a single-nucleotide polymorphism (SNP) to the gene therapy. It includes many biomedical disciplines and areas that typically contain the "bio-" prefix.

GENETIC VARIATION IN HUMAN

Variation of humans as a peculiarity of life and genetic phenomenon is one of main issues of biology. VARIATION is a common property of all living systems. It is an ability of organisms to change their features and properties and one of the most important adjustive properties which are influenced by environment. Variation is an event contrary to heredity and provides the variety of organisms. It may concern PHENOTYPE and GENOTYPE and always manifests itself by phenotypic changes. Therefore, there are two types of variations – PHENOTYPIC and GENETIC VARIATION.

The acquisition of new characters and properties under the immediate influence of environmental factors is called PHENOTYPIC VARIATION. It is usually observed in a group of organisms affected by similar environmental factors, not inherited and its scale depends on genetically determined limits of variation.

Its *characteristics* are:

- *group character* – all individuals of one species respond to the influence of the environment;
- *adaptive*;
- *reversible* – if the factors influence ceases, the variation disappears;

If hazardous environmental factors act for a long time during the period of development, the changes are *irreversible* (for example, skeleton deformation due to rickets). A condition of environmental etiology that mimics a condition usually of genetic etiology is termed PHENOCOPY.

- *not inheritable* and adequate to the action of surrounding;
- *norm of reaction* - the genetically determined limits of the character varieties under the action of different external conditions.

The norm of reaction is congenital as it is determined by a genotype. Thus, any character depends on two factors: genotype and environment. Sings with wide norm are not qualitative but quantitative. They depend on a great number of genes and are not inherited as Mendelian traits.

GENETIC VARIATION is a variation concerning the genotype. There are two types of genetic variation: RECOMBINATION and MUTATIONS.

RECOMBINATION is a process which makes new combinations of genetic information.

New combinations appear by the following ways:

- independent assortment of chromosomes at the time of formation of gametes;
- random fertilization;
- reciprocal recombination of linked genes in chromosomes by crossing over in Prophase I of meiosis;
- the chance of marriage;
- multiple alleles.

Different combinations bring diversity in genotype and phenotype of different organisms but total of characters in a population remains unchanged.

MUTATIONS are new sudden inheritable discontinuous variations which appear in the organisms due to permanent change in their genotypes.

The typical properties of mutations are:
- occur suddenly in single individuals. It is impossible to predict in what individual, when and what kind of mutation may appear;
- non adaptive as a rule / seldom have an adequate and, consequently, useful character. More often they decrease the organism viability and appear spontaneously.
- usually mutations are irreversible and are inherited by the following generations;
- non adequate to the acting factor. The same factor may cause different mutations and, vice versa, the same mutations are sometimes caused by different factors.

Exercise 5. Answer the questions.

1. What is the primary focus of medical biology (biomedicine)?
2. How does genetic variation contribute to the diversity of organisms?
3. What are the two main types of genetic variation?
4. Explain the concept of phenotypic variation and provide an example.
5. How does the environment influence phenotypic variation?
6. Describe the characteristics of phenotypic variation.
7. What is the norm of reaction, and what factors does it depend on?
8. How does the genetic variation differ from the phenotypic one?
9. Explain the process of recombination and how it contributes to genetic diversity.
10. What are mutations, and what are their typical properties?
11. Why are mutations often considered non-adaptive, and how do they affect an organism's viability?

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2.Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 6: **BIOLOGY. PART II**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у біології.
Основні поняття: генетичні відхилення, ДНК, клітинний поділ.

І.План

1.Тестування з біології.

2.Генетичні відхилення.

ІІ. Практичні заняття, які виконуватимуться

Exercise 1. Study the tests. (Основна [1, с. 38-48])
1. A young man has come to the genetic consultation. He complains of abnormalities in his physical and reproductive development. Microscopy of his oral mucosa cells shows one Barr body. What karyotype is the most likely in this young man?
A 47, XXY
B 45, X0
C 47, XY, +21
D 47, XY, +18
E 47, XYY
2. The mother's karyotype has 45 chromosomes. It was determined that translocation of chromosome 21 to chromosome 14 had occurred. What disorder is likely to be observed in the child of this woman if the father's karyotype is normal?
A Down syndrome
B Klinefelter syndrome
C Patau syndrome
D Edwards syndrome
E Morris syndrome (androgen insensitivity)
3. The initiation of transcription process becomes possible when an enzyme DNA-dependent RNA polymerase attaches to a certain segment of DNA molecule. Name this DNA segment:
A Promoter
B Terminator
C Regulator
D Repressor
E Suppressor
4. A mutation has occurred in a cell in the first exon of its structural gene. The number of nucleotide pairs changed from 290 to 250. Name the type of mutation:
A Deletion
B Inversion
C Duplication
D Translocation
E Nullisomy
5. Cells of a person working in the Chornobyl Exclusion Zone have undergone a mutation in DNA molecule. However, with time the damaged interval of DNA molecule restored its initial structure with a specific enzyme. In this case the following occurred:
A Repair
B Replication
C Transcription
D Reverse transcription
E Translation

6. A man is a carrier of HIV that is an RNA virus. The cells of this patient synthesize viral DNA. This process is based on:
A Reverse transcription
B Replication
C Transcription
D Repair
E Translation
7. The parents with normal hearing have two daughters and a son, who are congenitally deaf. Their other 5 children are healthy. What is the pattern of deafness inheritance in this case?
A Autosomal recessive
B Autosomal dominant
C X-linked recessive
D X-linked dominant
E Y-linked
8. Ingestion of plants and mushrooms that grow along highways is dangerous due to risk of lead poisoning. What is the main source of environmental pollution with this chemical element?
A Exhaust fumes
B Sewage
C Acid rains
D Herbicides
E Chemical fertilizers
9. At the stage of translation in the rough endoplasmic reticulum, the ribosome moves along the mRNA. Amino acids are joined together by peptide bonds in a specific sequence, and thus polypeptide synthesis takes place. The sequence of amino acids in a polypeptide corresponds to the sequence of:
A mRNA codons
B tRNA nucleotides
C tRNA anticodons
D rRNA nucleotides
E rRNA anticodons
10. The organisms to be identified have a nucleus surrounded by a nuclear membrane. Genetic material is concentrated predominantly in the chromosomes that consist of DNA strands and protein molecules. These cells divide mitotically. Identify these organisms:
A Eukaryotes
B Bacteriophages
C Prokaryotes
D Viruses
E Bacteria
11. An infant has been diagnosed with microcephaly. Doctors suspect that this brain disorder have developed due to the fact that the mother has been taking actinomycin D during her pregnancy. What germinal layers have been affected by this teratogen?
A Ectoderm
B Entoderm
C Mesoderm
D Entoderm and mesoderm
E All germinal layers
12. A team of medical students is performing research on phases of cell cycle. During one of the mitotic phases the cell has almost divided, the chromosomes are decondensed and two nuclei have begun to form around them. Which of the following phases most likely takes place in the cell?
A Telophase
B Prophase
C Metaphase

D Anaphase
E Another variant
13. As a result of prophylactic medical examination a 7-year-old boy was diagnosed with Lesch-Nyhan syndrome (only boys fall ill with it). The boy's parents are healthy but his grandfather by his mother's side suffers from the same disease. What type of disease inheritance is it?
A Recessive, sex-linked
B Dominant, sex-linked
C Autosomal recessive
D Autosomal dominant
E Semidominance
14. Representatives of a certain human population can be characterized by elongated body, height variability, decreased volume of muscle mass, increased length of limbs, decreased size and volume of ribcage, increased perspiration, decreased indices of base metabolism and fat synthesis. What type of adaptive evolution is it?
A Tropical
B Arctic
C Moderate
D Intermediate
E Mountain
15. Hartnup disease is caused by point mutation of only one gene which results in disturbance of tryptophan absorption in the bowels and its resorption in renal tubules. It is the reason for disorder of both digestive and urination systems. What genetic phenomenon is observed in this case?
A Pleiotropy
B Complementary interaction
C Polymery
D Codominance
E Semidominance
16. A 28-year-old female patient consulted a gynecologist about sterility. Examination revealed underdeveloped ovaries and uterus, irregular menstrual cycle. Analysis of the sex chromatin revealed 2 Barr's bodies in most somatic cells. What chromosome disease is most likely?
A Triple X syndrome
B Edwards' syndrome
C Patau's syndrome
D Klinefelter's syndrome
E Turner's syndrome
17. During an experiment, a Southern blot analysis is done by digesting DNA samples with a single restriction endonuclease, separating the digestion products by gel electrophoresis, and transferring them to a filter. The investigator probes the filter by exposing it to a cDNA clone that encodes a single immunoglobulin-constant region. The figure shows the resulting pattern with DNA samples isolated from different organs. Assuming there were no technical errors, the Southern blot analysis results demonstrate which of the following processes?
A Gene rearrangement
B Apoptosis
C Affinity maturation
D RNA splicing
E Somatic hypermutation
18. A woman with the III (B), Rh (-) blood group gave birth to a child with the II (A) blood group. The child is diagnosed with hemolytic disease of newborn caused by rhesus incompatibility. What blood group and Rh does the father have?
A II (A), Rh (+)
B I (0), Rh (+)
C III (B), Rh (+)

D I (0), Rh (-)
E II (A), Rh (-)

19. A couple comes for preconception genetic counselling because they both have a family history of α-thalassemia. The woman has a minimally decreased hemoglobin concentration. Genetic studies show a single gene deletion. The man has microcytic anemia and a two-gene deletion. If the two-gene deletion is in trans (one deletion on the maternal gene and one deletion on the paternal gene), which percentage of their offspring will have a two-gene deletion?
A 50%
B 25%
C 0%
D 75%
E 100%

20. Genealogical analysis of a child with myotonic dystrophy determined that this disease is present in every generation, equally for both genders, and the inheritance risk is equal no matter which parent is affected. If one of the parents is heterozygous for this disease and the other one is healthy, the risk of them giving birth to a sick child is 50%. What type of disease inheritance is it?
A Autosomal dominant
B Autosomal recessive
C X-linked dominant
D X-linked recessive
E Y-linked

Exercise 2. Translate the following word combinations into Ukrainian.
Result in disturbance of tryptophane absorption, detect the presence of parasite eggs, pattern of deafness inheritance, undergo a mutation in DNA molecule, caused by rhesus incompatibility, primarily responsible for hormone production, multiple developmental defects and intrauterine death, eggs with an operculum at the end, mitotically dividing cell, restore the initial structure with a specific enzyme, risk of lead poisoning, reveal scolex with four suckers and hooks, decreased indices of base metabolism and fat synthesis, number of nucleotide pairs, to contain live larvae, present in every generation, sanitary assessment, achieved via several mechanisms, occur at the following stage, liquid feces with mucus and blood, oval unicellular organisms with cilia.

Exercise 3. Find synonyms to the following words.

next	nearly
fluid	production
excrement	find or detect
flagellum	speed or number of times
disorder or impairment	carry out

Exercise 4. Form adjectives from the nouns.

paroxysm	pole
abdomen	apyrexia
cell	genome
uterus	health
development	asymmetry

Exercise 5. Match the terms with their definitions.

Nuclear envelope, endocytocytosis, ploidy, striped muscle, endoplasmic reticulum, mutagenesis, parasitism, protozoa, peroxisomes, synapsis.

1._____ is a muscle where the cells exhibit cross-striations at the light microscope level. Striped muscle tissue is further sub classified on the basis of its location: skeletal muscle and cardiac muscle.

2._____ are small, spherical, membrane-bound organelles which closely resemble lysosomes in size and electron microscopic appearance. They contain catalase, which regulates hydrogen peroxidase concentration, utilizing in the oxidation of a variety of potentially toxic metabolites and ingested substances including phenols and alcohol.

3._____ is a cellular process in which substances are brought into the cell. The material to be internalized is surrounded by an area of cell membrane, which then buds off inside the cell to form a vesicle containing the ingested material.

4._____ is a process by which the genetic information of an organism is changed, resulting in a mutation. It may occur spontaneously in nature, or as a result of exposure to mutagens. It can also be achieved experimentally using laboratory procedures.

5._____ consists of two layers of membrane (each layer of standard phospholipid bilayer structure) which represent a specialized part of the endoplasmic reticulum. The intermembranous (perinuclear) space is continuous with that of the endoplasmic reticulum, and the outer surface of the nuclear envelope is connected with ribosomes.

6._____ an ecological relationship between populations belonging to two different species, in which one species is physically and physiologically dependent of another species for a certain part of their life cycle.

7. _____ single-celled eukaryotic organisms, with more than 65,000 species, many of which are parasites of humans and animals.

8. _____ is the number of complete sets of chromosomes in a cell, and hence the number of possible alleles for autosomal and pseudoautosomal genes.

9. _____ is a type of organelle found in eukaryotic cells, consists of an interconnecting network of membranous tubules and flattened sacs (cisternae) which ramifies throughout the cytoplasm. Much of its surface is studded with ribosomes giving a rough or granular appearance.

10. _____ (also called syndesis) is the pairing of two homologous chromosomes that occurs during meiosis.

Exercise 6. Fill in the blanks with the words given in the box.

cleft lip, recessive, predisposition, copies, sequence, defects, inheritance patterns, mutations, schizophrenia, chromosomal, single gene, individual chromosome

Genetic Disorders

A genetic disorder is a disease caused by changes, or ……., in an individual's DNA …… . Genetic disorders can be divided into three different categories: single gene, …… or complex disorders.

Single gene disorders are caused by …… in one particular gene. There are over 10,000 human disorders caused by a change, known as a mutation, in a single gene. Individually, single gene disorders are each very rare, but as a whole, they affect about one per cent of the population. Since only a …… is involved, these disorders often can be easily tracked through families and geneticists can predict the risk of them occurring in later generations. Single gene disorders can be divided into different categories: dominant, …… and X-linked.

Chromosomal disorders result from changes in the number or structure of the chromosomes. Changes in the number of chromosomes happen when there are more or fewer …… of a particular chromosome than usual. Changes in chromosome structure happen when the material in an …….. is disrupted or rearranged in some way. This may involve the addition or loss of parts of a chromosome.

Complex disorders (also known as multifactorial or polygenic) are those that are caused by the simultaneous effect of many different genes, often in a complex interaction with environmental and lifestyle factors such as diet. Many of the common diseases of adult life, such as diabetes

mellitus, hypertension, ……, and most common developmental abnormalities, such as …….. and congenital heart defects, have a strong genetic component and are caused by more than one genetic change.

Because polygenic diseases involve more than one gene, …….. are diverse and complex. If a parent has a disease, it does not necessarily mean a child will develop the same disease. On the other hand, an individual may not be born with a disease but may be at a higher risk of developing it. This is known as genetic ……. or susceptibility.

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Тема № 7: **HISTOLOGY. PART I**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у гістології.
Основні поняття: клітини, органели, молекули, ядерна мембрана.

I.План

1.Гістологія як наука.

2.Особливості мембранної структури.

II. Практичні заняття, які виконуватимуться

Exercise 1. Form adjectives from the nouns:

structure, cell, variety, function, nucleus, cytoplasm, membrane, metabolism, vision, molecule, nitrogen, biology, analogy, fungus, bacterium

Exercise 2. Form nouns from the following verbs:

to understand, to examine, to compose, to identify, to arrange, to distribute, to provide, to regulate, to expose, to appear, to move

Exercise 3. Read the text and translate the words in bold.

Histology

Histology, also known as microscopic anatomy or microanatomy, is the branch of biology that deals with the study of tissues at a microscopic level. It is a **crucial** field in both the biological and medical sciences, as it allows scientists and medical professionals to understand the structure and function of tissues in living organisms.

The primary goal of histology is to examine the organization and composition of tissues at the cellular and subcellular levels. By studying tissues at this level of detail, histologists can identify and classify different cell types, understand how cells are arranged within tissues, and investigate the role of various cellular components in tissue function.

All cells are bounded by an external limiting membrane called the plasma membrane or *plasmolemma*, which serves as a dynamic interphase between the internal environment of the cell and various external environments. The nucleus is the largest organelle and its substance, often referred as the *nucleoplasm* is **bounded** by a membrane system called the *nuclear envelope*. The cytoplasm contains the variety of organelles most of which are also bounded by membranes. An extensive system of membrane-bound tubules, saccules and **flattened** cistern, known as the *endoplasmic reticulum*, is widely distributed throughout the cytoplasm. A more **distended** system of membrane-bound saccules, the *Golgi apparatus*, is typically located close to the nucleus. **Scattered** free in the cytoplasm are a number of relatively large elongated organelles called *mitochondria*, which have a smooth outer membrane and **convoluted** inner membrane system.

The cytoplasmic organelles are **suspended** in a fluid **medium** called the *cytosol* in which much of the **intermediary** metabolism of the cell takes place. Within the cytosol, there is a network of minute tubules and **filaments** collectively known as the *cytoskeleton*, which provides structural support for the cell and its organelles as well as providing a mechanism for cellular and intracellular movement; elements of the cytoskeleton are only visible with very high **magnification**.

In Singer and Nicholson model, cell membranes consist basically of phospholipid molecules arranged as a bilayer. Phospholipid molecules consist of a *polar*, hydrophilic (water-loving) *head*

and *non-polar*, hydrophobic (water-heating) *tail*. The polar heads are mainly derived from glycerol **conjugated** to a nitrogenous compound such as choline, ethanolamine or serine via a phosphate bridge. The phosphate group is negatively charged whereas the nitrogenous group is positively charged. The non-polar tail of the phospholipid molecule consists of two long-chain fatty acids each covalently linked to the glycerol component of the polar head. The weak intermolecular forces which hold the bilayer together allow individual phospholipid molecules to move relatively freely within each layer and sometimes to 'flip" between layers. Cholesterol molecules regulate the **fluidity** and stabilize the phospholipid bilayer. Associated with the bilayer are a variety of protein molecules, which make up almost half of the total mass of the membrane. Some proteins are **incorporated** within the membrane (**intrinsic** or integral proteins) whereas others are held to the inner or outer surface by weaker electrostatic forces (**extrinsic** or integral proteins). Some intrinsic proteins **span** the entire thickness of the membrane (transmembrane proteins) to be exposed to each surface, some functioning as "pores" through which hydrophilic molecules are actively or passively transported across the membrane. Many proteins are not fixed but rather "float" within the membrane such that they are freely mobile within the plane of the phospolipid bilayer. This has led to the use of the term *fluid mosaik model of membrane structure*. The lipid component of the membrane principally determines its mechanical properties, the dynamic functions of the biological compartments is a function of the membrane proteins. Other integral proteins may be fixed by attachment to elements of the cytoskeleton. On the external surface of the plasma membranes of animal cells, many of the membrane proteins and some of the membrane lipids are conjugated with short chains of polysaccharide. These glycoproteins and glycolipids respectively project from the surface of the bilayer forming an outer coating, which may be analogous to the cell walls of p1ants, bacteria and fungi. This polysaccharide layer has been termed the *glycocalyx* and appears to vary in thickness in different cell types; a similar layer is often also present on membrane surfaces within the cell which are not exposed to the cytosol (e.g. **luminal** aspects of membrane systems). In some situations, the glycocalyx also provides mechanical and chemical protection for the plasma membrane.

Exercise 4. Answer the questions.

1. What is the primary goal of histology?
2. What serves as a dynamic interphase between the internal environment of the cell and various external environments?
3. What is the largest organelle of the cell?
4. What do phospholipid molecules consist of?
5. What are polar heads mainly derived from?
6. What provides structural support for the cell and its organelles as well as a mechanism for cellular and intracellular movement?
7. What makes up almost half of the total mass of the membrane?
8. What has led to the use of the term fluid mosaik model of membrane structure?
9. May the glycoproteins and glycolipids of the bilayer forming an outer coating be analogous to the cell walls of plants, bacteria and fungi?
10. What does the lipid component of the membrane principally determine?
11. What may provide mechanical and chemical protection for the plasma membrane?

Exercise 5. Translate into English.

живі організми; склад тканин на клітинному та субклітинному рівнях; закритий зовнішньою обмежувальною оболонкою; ядерна мембрана; розгалужена система пов'язаних оболонкою канальців, мішечків і сплощених цистерн; широко поширений у цитоплазмі; мережа дрібних канальців і ниток; організований як подвійний шар; фосфатний місток; довголанцюгові жирні кислоти, для «перевертання» між шарами; біологічні відсіки, відрізнятись за товщиною.

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Тема № 8: **HISTOLOGY. PART II**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у гістології.
Основні поняття: гістологічний зразок, клітинний поділ.

I.План

1.Тестування з гістології.

2.Синонімія у медичній термінології..

II. Практичні заняття, які виконуватимуться

Exercise 1. Read the tests. (Основна [1, с. 57-67])
1. A smear specimen of human red bone marrow shows, among myeloid cells and adipocytes, certain stellate cells with oxyphilic cytoplasm that are connected with their cellular processes. Name these cells:
A Reticular cells
B Fibroblasts
C Macrophages
D Dendritic cells
E Osteocytes

2. The antigen of tissue compatibility of child inherits from a father and mother. It is known that expression of paternal antigens in embryogenesis begins before time. But the immune system of mother doesn't tear away an embryo. What organ first of all prevents an embryo rejection by mother organism?
A Chorion
B Amnion
C Allantois
D Yolk sack
E Umbilical Cord

3. A microslide shows a section of a bean-shaped organ with cortical and medullary substances. Its cortical substance contains separate spherical nodules 0.5-1 mm in diameter; its medullary substance consists of medullary cords. This histological section demonstrates the following organ:
A Lymph node
B Kidney
C Thymus
D Adrenal gland
E Spleen

4. A 22-year-old patient was admitted to the hospital with complaints of heavy nasal breathing. During the examination of her nasal cavity the doctors found thickened mucous membrane, a lot of mucus and nodular infiltrates without erosions in the nose. The nasal rhinoscleroma was diagnosed and biopsy was taken. What typical morphological changes may be found?
A Granulomas with Mikulicz's cells
B Granulomas with Virchow's cells
C Granulomas with Langhan's cells
D Granulomas with foreign body cells
E Interstitial inflammation

5. One of the parts of the central nervous system has a layered arrangement of neurons, among which there are stellate, spindle-shaped, horizontal, and pyramidal cells. This structure corresponds with the following part of the nervous system:
A Cerebral cortex
B Medulla oblangata
C Hypothalamus
D Cerebellum
E Spinal cord

6. A histological preparation demonstrates a gland. In its lobules there are acini with secretory cells that have two zones. Their basal zone is homogeneous basophilic, while the apical one is zymogenic oxyphilic. What organ has these key morphological features?
A Pancreas
B Liver
C Parotid salivary gland
D Sublingual salivary gland
E Submandibular salivary gland

7. A histological specimen shows significant amount of mucous connective tissue (Wharton's jelly), vessels, as well as remnants of yolk sac stalk and allantois. Name this organ:
A Umbilical cord
B Oesophagus
C Ureter
D Urethra
E Vermiform appendix

8. Some diseases of large intestine lead to the changes in the quantitative ratio between mucosal epithelial cells. What cell types are normally predominant in the cryptal epithelium of the large intestine?
A Goblet cells
B Ciliated columnar epithelial cells
C Endocrine cells
D Cells with acidophilic granules
E Poorly differentiated cells

9. An inflammation can be characterized by hemocapillary dilation in the affected area, decreased blood circulation, and increased vessel wall permeability. What cells play the key role in this process?
A Tissue basophils
B Fibroblasts
C Plasma cells
D Eosinophils
E Macrophages

10. In loose connective tissue of the salivary glands oval middle size cells which synthesize antibodies are revealed. They have spherical eccentrically positioned nucleus with chromatin clumps resembling cartwheel or clock face. Name these cells.
A Plasma cells
B Adipose cells
C Neutrophils
D Fibroblasts
E Macrophages

11. A histological specimen presents a receptor zone of a sensoepithelial sense organ. Cells of this zone are placed upon the basal membrane and include the following types: external and internal receptor cells, external and internal phalangeal cell, stem cells, external limiting cells and external supporting cell. The described receptor zone belongs to the following sense organ:
A Acoustic organ
B Visual organ
C Gustatory organ
D Equilibrium organ
E Olfactory organ

12. Examination of a 43 y.o. patient revealed that his stomach has difficulties with digestion of protein food. Gastric juice analysis revealed low acidity. Function of which gastric cells is disturbed in this case?
A Parietal exocrinocytes
B Main exocrinocytes
C Mucous cells (mucocytes)
D Endocrine cells
E Cervical mucocytes

13. A microspecimen of the submandibular salivary gland shows some basket-shaped cells concentrated around the acini and excretory ducts. These cells surround bases of the serous cells and are called myoepitheliocytes. They relate to the following tissue:
A Muscular tissue
B Epithelial tissue
C Neural tissue
D Special connective tissue
E Loose fibrous connective tissue

14. On autopsy a 35-year-old man the focus of carnification 5 cm in diameter enclosed in a thin capsule was revealed in the second segment of the right lung. The focus consists of a tough dry friable tissue with a dim surface. For what disease are these morphological changes typical?
A Tuberculoma
B Lung cancer
C Chondroma
D Tumorous form of silicosis
E Postinflammatory pneumosclerosis

15. Acute catarrhal inflammation of eye conjunctiva and nasal cavity mucosa develop every spring and summer in the patient during blossoming of herbs and trees. What cell elements activation and phagocytosis rest in the base of this syndrome?
A Mast cells
B Platelets
C Macrophages
D Neutrophils
E Endothelium cells

16. In the histological connective tissue specimen that stained with hematoxylin eosin isogenic groups of cells surrounded by basophilic ground substance were revealed. Fibrous structures are not visible. What tissue is represented in the slide?
A Hyaline cartilage
B Elastic cartilage

C Dense regular connective tissue
D Fibrous cartilage
E Bone tissue

17. Calcification of the intercellular substance of bone tissue is accompanied by the deposition of hydroxyapatite crystals along the collagen fibres. This process requires the presence of alkaline phosphatase in the intercellular substance. What cell produces this enzyme?
A Osteoblasts
B Osteocytes
C Osteoclasts
D Chondroblasts
E Chondrocytes

18. In a conditional experiment, portions of visceral layer of the ventral mesoderm, which lies adjacent to the endothelial tubes and formed in the cervical region of the embryo at the beginning of the third week of embryogenesis, were ruined. The formation of what muscle tissue will be damaged?
A Cardiac muscle tissue
B Skeletal muscle tissue
C Smooth muscle tissue
D Myoepithelial cells
E Muscles of iris

19. Histological specimen shows organ parenchyma consisting of lymphoid tissue that forms lymph nodules; the nodules are located diffusely and have a central artery. What anatomical structure has such morphological characteristics?
A Spleen
B Tonsil
C Lymph node
D Thymus
E Red bone marrow

20. A 67-year-old patient with clinical diagnosis of chronic bronchitis, pneumosclerosis, and cardiopulmonary decompensation has the biopsy material taken from the suspicious area in his right bronchus mucosa. Cellular and tissue atypism along with pearly bodies can be histologically detected. What pathologic process is characterized by the described histological changes?
A Squamous cell carcinoma of bronchus with keratinization
B Acute bronchitis
C Squamous cell metaplasia of bronchial mucosa
D Bronchiectasis
E Polypoid chronic bronchitis

Exercise 2. Translate into Ukrainian.

Tissue compatibility, increased vessel wall permeability, medullary cords, significant amount of connective tissue, thickened mucous membrane, a layered arrangement of neurons, remnants of yolk sac stalk and allantois, according to such features as size and form, rectangular cells from 50 to 120 micrometers large, closely adjoined, predominant in the cryptal epithelium of the large intestine, spherical eccentrically positioned nucleus with chromatin clumps resembling cartwheel or clock face, hemocapillary dilation in the affected area, changes in the quantitative ratio, impregnated with a potassium dichromate solution, focus consists of a tough dry friable

tissue with a dim surface, arranged in the form of a palisade, located as wheel spokes with a light site of cytoplasm near it.

Exercise 3. Find synonyms to the following words.

capacity	site
knobble	fatty
picture	sample
fence	a number of
proportion	peculiarity
separate	tumour

Exercise 4. Fill the table with the missing parts of speech.

Verb	**Noun**	**Adjective**
		Changeable
impregnate		----------
		Resolvable
specify		
	connection	
decrease		----------
	increasing	----------

Exercise 5. Match the parts of the sentences.

1.	The number of chromosomes is	a	either alone of attached to messenger RNA molecules in stall spiral-shaped aggregations called polyribosomes or polysomes.
2.	Neurons of the spinal cord are surrounded by the layer of	b	constant for particular species.
3.	Ribosomes may be present in the cytoplasm	c	neuroglial cells, which are called mantle gliocytes.
4.	Specialized fibroblast is a large active cell by size 40 - 45 mkm	d	the skin ectoderm, are situated in sweat, mammary, salivary and the other glands.
5.	The respiratory alveolar cells are extremely thin squamos cells,	e	on the basis of random introduction of cysts, eggs or larvae into the digestive system of other species.
6.	The circulatory system of tapeworms	f	whose nucleus is light, oval shape, contains 1-2 nucleolus
7.	The skin constitutes a relatively impenetrable barrier to	g	most micro-organisms unless breached by injury such as abrasion or burning.
8.	The origin of parasitism is	h	which lie most of the surface of the alveoli.
9.	Myoepithelial cells develop from	i	Turbellaria, Trematoda, Cestoda
10.	The phylum Plathelmlnthes is divided into three classes:	j	is undeveloped.

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Тема № 9: **PHYSIOLOGY. PART I**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у фізіології.
Основні поняття: інсомнія, гіпертонія,остеопароз.

І. План

1.Робота з кейсами.

2.Використання синонімії у медичній термінології.

ІІ. Практичні заняття, які виконуватимуться

Exercise 1. Read the cases, translate and give answers.
Case Study: Respiratory Response to High Altitude
Patient Profile:
Name: Sarah
Age: 28
Occupation: Mountaineer
Medical History: No known pre-existing medical conditions
Case Background:
Sarah is an experienced mountaineer who has embarked on a journey to climb a high-altitude mountain. She is currently at an elevation of 4,000 meters (13,123 feet) above sea level and plans to ascend further. As she continues her ascent, she starts noticing changes in her breathing pattern and overall feeling of breathlessness. She wonders why her body is reacting this way and seeks to understand the physiological reasons behind her respiratory symptoms.
Case Questions:
1. What is the main physiological factor that causes changes in breathing pattern at high altitudes?
2. Explain the process of acclimatization to high altitudes. How does the body adapt to the reduced oxygen availability?
3. Sarah's symptoms include increased breathlessness and rapid breathing. What is the term used to describe this phenomenon, and how does it help her body cope with the reduced oxygen levels?
4. Apart from changes in respiratory pattern, what other cardiovascular adjustments might Sarah's body undergo in response to high altitude?
5. As a mountaineer, what steps can Sarah take to minimize the effects of high altitude on her respiratory and cardiovascular systems?

Case Study: Effects of Exercise on Cardiorespiratory System

Patient Profile:

Name: Alex
Age: 35
Occupation: Office Manager
Medical History: No known pre-existing medical conditions, sedentary lifestyle
Case Background:
Alex has recently decided to adopt a healthier lifestyle and start an exercise routine. He has been going to the gym regularly for the past month and participating in cardio and strength training exercises. However, he notices that during intense workouts, he experiences shortness of breath, increased heart rate, and sometimes dizziness. He wonders if these symptoms are normal and seeks to understand how exercise affects his cardiorespiratory system.

Case Questions:

1. Explain the cardiovascular response to exercise. Why does Alex experience an increased heart rate during intense workouts?
2. What is the role of the respiratory system during exercise? How does it help Alex's body meet the increased oxygen demands?
3. Alex mentions experiencing shortness of breath and dizziness during workouts. What physiological mechanisms could explain these symptoms?
4. How can Alex optimize his exercise routine to improve his cardiovascular and respiratory fitness?
5. What are the potential long-term benefits of regular exercise on Alex's cardiorespiratory system?

Case Study: Impact of Dehydration on Exercise Performance

Patient Profile:

Name: Emily
Age: 28
Occupation: Fitness Instructor
Medical History: No known pre-existing medical conditions, active lifestyle

Case Background:

Emily is a fitness instructor who leads intense workout classes. She enjoys pushing herself and her clients to their limits. However, recently she has noticed a decrease in her exercise performance. She experiences fatigue, muscle cramps, and a general feeling of weakness during her workouts. She wonders if her hydration status could be affecting her performance and wants to understand the physiological effects of dehydration on the body.

Case Questions:

1. Explain the importance of hydration during exercise. How does dehydration affect physical performance?
2. What are the signs and symptoms of dehydration? How can Emily recognize if she is dehydrated?
3. Describe the role of water in thermoregulation during exercise. How does dehydration impact the body's ability to regulate temperature?
4. How does dehydration affect cardiovascular function during exercise?
5. Provide recommendations for Emily to stay properly hydrated before, during, and after her intense workout classes.

Exercise 2. Translate the given word-combinations into Ukranian:

Severe emotional strain: Left shoulder blade: Laboratory studies: Amino acid metabolism: Basic unit: High-pitched voice: Palpable expansion: Cold sweat: Main functions: Total thyroidectomy:	

Exercise 3. Find synonyms to the given words in the tests.

1. Severe:
   a) Mild b) Harsh c) Pleasant d) Strong
2. Emotional:
   a) Rational b) Sentimental c) Logical d) Sensible

3. Laboratory:
a) Workroom b) Research c) Clinic d) Factory
4. Amino acid metabolism:
a) Nutrient transformation b) Protein breakdown c) Carbohydrate digestion d) Cellular respiration
5. Basic unit:
a) Main component b) Fundamental element c) Complex structure d) Essential factor
6. High-pitched:
a) Deep b) Low-toned c) Shrill d) Muted
7. Palpable:
a) Unnoticeable b) Tangible c) Intangible d) Hidden
8. Cold sweat: a) Chilled perspiration b) Freezing dampness c) Warm moisture d) Frigid dew
9. Main functions:
a) Primary duties b) Essential roles c) Secondary tasks d) Additional responsibilities
10. Total thyroidectomy:
a) Complete thyroid r**emoval** b) Partial organ excision c) Limited organ biopsy d) Minor tissue removal

Exercise 4. Form adjectives from the nouns.
Severity
Emotion
Laboratory
Metabolism
Unit
Pitch
Palpation
Sweat
Function
Totality

Exercise 5. Match the medical conditions with their definitions:

A chronic condition characterized by high blood pressure, which can increase the risk of heart disease and stroke.	Diabetes mellitus
A disorder in which the body is unable to regulate blood sugar levels properly, leading to high blood sugar (hyperglycemia).	Anemia
A chronic lung disease characterized by inflammation and narrowing of the airways, leading to difficulty in breathing and wheezing.	Migraine
A condition where the body lacks enough healthy red blood cells to carry adequate oxygen to the tissues, leading to fatigue and weakness.	Arthritis
A condition where bones become fragile and brittle, increasing the risk of fractures.	Insomnia
Inflammation of one or more joints, leading to pain, stiffness, and decreased joint mobility.	Hyperthyroidism
Overactivity of the thyroid gland, resulting in an accelerated metabolism and various symptoms such as weight loss, rapid heartbeat, and anxiety.	Hypertension
A sleep disorder characterized by difficulty falling asleep or staying asleep, leading to daytime fatigue and impairment.	Bronchitis

A respiratory condition involving inflammation of the bronchial tubes, leading to coughing and difficulty in breathing.	Asthma
A neurological condition characterized by severe headaches, often accompanied by sensitivity to light and sound.	Osteoporosis

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Тема № 10: **PHYSIOLOGY. PART II**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у фізіології.
Основні поняття: рецептори, аглютинація, стимуляція.

I. План

1.Тестування з фізіології.

2.Використання синонімії у медичній термінології.

II. Практичні заняття, які виконуватимуться

Exercise 1. Read the tests. (Основна [1, с. 76-86])

1. Patient with hypersecretion of gastric juices was recommended to exclude concentrated bouillons and vegetable decoctions from the diet because they stimulate gastric secretion. What is dominating mechanism of stimulation of secretion in this case?
A Stimulation of gastrin production by G-cells
B Irritation of taste receptors
C Irritation of mechanoreceptors of the oral cavity
D Irritation of mechanoreceptors of the stomach
E Stimulation of excretion of secretin in the duodenum

2. ABO blood group is being determined. Erythrocyte agglutination occurred when standard sera of group I and group II were introduced into the blood being analysed, while group III serum caused no agglutination. What agglutinogens do these erythrocytes have?
A B
B A
C A and B
D C
E D and C

3. Toxic damage to hepatic cells resulted in disruption of the patient's liver function and the patient developed oedemas. What changes of blood plasma are the main cause of oedema development?
A Decrease of albumin content
B Increase of globulin content
C Decrease of fibrinogen content
D Increase of albumin content
E Decrease of globulin content

4. After a trauma the patient has developed right-sided paralyses and disturbed pain sensitivity. On the left side no paralyses are observed, but pain and thermal sensitivity is disturbed. What is the cause of this condition?
A Unilateral right-side spinal cord injury
B Midbrain injury
C Brainstem injury
D Cerebellar injury
E Motor cortex injury

5. A student, whose educational achievements throughout the semester were poor, feels emotionally tense during the final test. What is the primary cause that induced the leading mechanism of emotional tension in this case?

A Lack of information
B Lack of time
C Lack of time and energy
D Lack of energy
E Lack of energy and information

6. Domestic accident has resulted in a significant blood loss in the patient, which was accompanied by a drop in blood pressure. What hormones ensure quick restoration of the blood pressure caused by a blood loss?
A Adrenaline, vasopressin
B Cortisol
C Reproductive hormones
D Oxytocin
E Aldosterone

7. *KCl* concentration in a solution that surrounds an isolated cell was increased. How will resting membrane potential (RMP) and cell excitability change in this case?
A RMP decreases, excitability increases
B RMP increases, excitability increases
C RMP increases, excitability decreases
D RMP decreases, excitability remains unchanged
E RMP and excitability remain unchanged

8. Usage of oral contraceptives with sex hormones inhibits secretion of the hypophysial hormones. Secretion of which of the indicated hormones is inhibited while using oral contraceptives with sex hormones?
A Follicle-stimulating
B Vasopressin
C Thyrotropic
D Somatotropic
E Oxytocin

9. During the breakout of acute respiratory infection in order to diagnose influenza the express-diagnosis based on revealing of specific viral antigen in the examined material (nasopharyngial lavage) is carried out. Which reaction is used for this?
A Immunofluorescence
B Complement binding
C Agglutination
D Precipitation
E Opsonization

10. A 38-year-old woman was admitted to the admission-diagnostic department with uterine bleeding. What are the most likely changes of blood?
A Reduction of haematocrit rate
B Increase of haematocrit rate
C Leukopenia
D Leucocytosis
E Polycythaemia

11. Due to action of electric current on the excitable cell there appeared depolarization of its membrane. Movement of what ions through the membrane caused depolarization?
A Na^+

B HCO_3^-
C Ca_2^+
D Cl^-
E K^+

12. The high level of Lactate Dehydrogenase (LDH) isozymes concentration showed the increase of LDH_1 and LDH_2 in a patient's blood plasma. Point out the most probable diagnosis:
A Myocardial infarction
B Skeletal muscle dystrophy
C Diabetes mellitus
D Viral hepatitis
E Acute pancreatitis

13. Prolonged vomiting resulted in dehydration of the patient's body. Under these conditions, water retention in the body is ensured primarily due to increased secretion of the following hormone:
A Vasopressin
B Aldosterone
C Natriuretic hormone
D Adrenaline
E Calcitonin

14. A 45-year-old woman presents with insufficient secretion of enterokinase enzyme. Enterokinase deficiency can cause disturbance of the following digestive function:
A Protein hydrolysis
B Carbohydrate hydrolysis
C Lipid hydrolysis
D Vitamin absorption
E Lipid absorption

15. A patient after hypertension stroke does not have voluntary movements in his right arm and leg with the increased muscle tone in these extremities. What type of dysfunction of nervous system is it?
A Central paralysis
B Peripheral paralysis
C Peripheral paresis
D Reflex paresis
E Central paresis

16. A person has increased pulmonary ventilation due to physical exertion. What indicator of external respiration will be significantly increased compared to the resting state?
A Respiratory volume
B Vital lung capacity
C Inspiratory reserve volume
D Expiratory reserve volume
E Total lung capacity

17. ECG study showed that the T-waves were positive in the standard extremity leads, their amplitude and duration were normal. The right conclusion would be that the following process runs normally in the heart ventricles:
A Repolarization
B Depolarization

C Excitement
D Contraction
E Relaxation

18. In course of an experiment a skeletal muscle is being stimulated by a series of electric impulses. What type of muscle contraction will arise, if every subsequent impulse comes in the period of shortening of the previous single muscle contraction?
A Holotetanus
B Partial tetanus
C Asynchronous tetanus
D A series of single contractions
E Muscle contracture

19. When measuring power inputs of a man by the method of indirect calorimetry the following results were obtained: 1000 ml oxygen consumption and 800 ml carbon dioxide liberation per minute. The man under examination has the following respiratory coefficient:
A 0,8
B 1,25
C 0,9
D 0,84
E 1,0

20. A concentrated solution of sodium chloride was intravenously injected to an animal. This caused decreased reabsorption of sodium ions in the renal tubules. It is the result of the following changes of hormonal secretion:
A Aldosterone reduction
B Aldosterone increase
C Vasopressin reduction
D Vasopressin increase
E Reduction of atrial natriuretic factor

Exercise 2. Translate the following word-combinations.
Yellow spots and streaks in the aortic intima, expiratory reserve volume, electric current, lowered concentration of calcium ions, air moisture, adrenal cortex, external membrane of excitable cell, loss of touch sensitivity, systemic blood pressure, atrioventricular node, voluntary movements, residual volume, frequency of cardiac contraction , suffer from milk curdling in stomach, food intake, mental activity, vegetable decoctions, abnormalities of the sound perception, disturbed absorption.

Exercise 3. Match the synonyms:

Injection	Counteragent
Healing	Remedy
Antidote	Nasal catarrh
Painkiller	Sac
Rhinitis	Medical history
Cyst	Bloating
Distention	Shot
Anamnesis	Therapeutic
Bile	Anesthetic
Medicine	Gall

Exercise 4. Fill the table with the missing parts of speech:

verb	noun	adjective
excite		
	use	
		sensitive
	suffering	
penetrate		
	prevention	
	_____	abnormal
apply		
	consumption	
		systemic

Exercise 5. Find the definitions to the given words:

Intrinsic factor	a) the process that occurs if an antigen is mixed with its corresponding antibody
Agglutination	b) when a change occurs inside a cell that causes the distribution of electric charges to alter, leaving the cell with a less negative charge than the outside
Evaporation	c) the proportion of the blood cells by volume in the total blood volume
Haematocrit	d) a muscular spasm of the entire body
Cross-adaptation	e) a glycoprotein produced by the parietal cells of the stomach
Holotetanus	f) a stage of an action potential in which the cell experiences a decrease of voltage due to the efflux of potassium (K+) ions along its electrochemical gradient
Depolarization	g) A temporary loss of sensitivity to a stimulus, especially an odour or a taste, following exposure to a different stimulus
Repolarization	h) a process by which an element or compound transitions from its liquid state to its gaseous state below the temperature at which it boils

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1.Одеський національний медичний університет: https://onmedu.edu.ua/
2.Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 11: **PHYSIOLOGY. PART III**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у фізіології.
Основні поняття: еритроцити, лейкоцити, абсорбція.

I. План

1.Тестування з фізіології.

2.Вивчення особливостей перекладу грецьких терміноелементів.

II. Практичні заняття, які виконуватимуться

Exercise 1. Read and translate the tests (Основна [1, с. 93-103]):
1. The doctor evaluates his patient's spirography. One of the evaluation parameters represents the normal amount of air displaced between normal inhalation and exhalation without any extra efforts or appointments. Which of the following is being evaluated in this case?
A Total volume
B Vital volume
C Tidal lung capacity
D Residual volume
E Inspiratory capacity

2. A patient with an injury of the Psoas major muscle was delivered to the traumatology centre. The patient has lost the ability to extend the lower leg at the knee joint. What nerve is damaged in this case?
A Femoral nerve
B Iliohypogastric nerve
C Ilioinguinal nerve
D Genitofemoral nerve
E Obturator nerve

3. A group of researchers aimed to study cardiac physiology found that overstretching of atria in the heart leads to decreased sodium reabsorption in the distal convoluted tubule and increase in glomerular filtration rate. Which of the following is the most likely cause of physiologic effects discovered by researchers?
A Natriuretic peptide
B Aldosterone
C Angiotensin
D Antidiuretic hormone
E Renin

4. A 14-year old girl presents to the emergency department for evaluation of an "infected leg'. She states there is no history of trauma but mentions that she had a history- of sickle cell disease. On physical examination, her upper part of right shin is very painful, red, swollen and hot. Her temperature is 39.2°C. An X-ray shows focal bony lysis and loss of trabecular architecture in the metaphysis of right tibia, increased activity of which of the following cells is the most likely cause of bone reabsorption in this patient?
A Osteoclasis
B Chondroblasts
C Osteocytes

D Chondrocytes
E Osteoblasts

5. A person has memorized a phone number for a short period of time (a few seconds). After making a call the person was unable to reproduce this sequence of numbers. In this case the process of memorizing was based on the following type of memory:
A Short-term memory
B Iconic memory
C Medium-term memory (episodic buffer)
D Long-term memory
E Secondary and tertiary memory

6. Analysis detects glucose and amino acids in the primary urine. In the residual urine they are absent due to tubular reabsorption of these substances. Where in the nephron does this process occur?
A Proximal convoluted tubule
B Distal convoluted tubule
C Henle's loop
D Collecting duct
E Macula densa

7. Proliferation of connective tissue in the liver parenchyma (fibrosis) that results from chronic disorders causes a blood flow disturbance in the classical hepatic lobules. Describe the blood flow direction in these lobules:
A From the periphery to the centre
B From the base to the apex
C Around the lobule
D From the centre to the periphery
E From the apex to the base

8. A patient suffers from disrupted patency of the airways at the level of small and medium-sized bronchial tubes. What changes of acid-base balance can occur in the patient?
A Respiratory acidosis
B Respiratory alkalosis
C Metabolic acidosis
D Metabolic alkalosis
E Acid-base balance remains unchanged

9.Upon toxic damage of hepatic cells resulting in disruption of liver function the patient developed oedemas. What changes of blood plasma are the main cause of oedema development?
A Decrease of albumin content
B Increase of globulin content
C Decrease of fibrinogen content
D Increase of albumin content
E Decrease of globulin content

10. A patient with massive burns received a skin graft from a donor. On the 8th day after the grafting, the transplant became oedematous and discoloured. On the 11th day transplant rejection started. What cells take part in this process?
A T lymphocytes
B Eosinophils

C B lymphocytes
D Erythrocytes
E Basophils

11. A 7-year-old girl has signs of anaemia. Laboratory testing determined the deficiency of pyruvate kinase in her erythrocytes. In this case the main role in anaemia development belongs to the disturbance of a certain process. What process is disturbed in this girl?
A Anaerobic glycolysis
B Amino acid deamination
C Oxidative phosphorylation
D Tissue respiration
E Peroxide decomposition

12. A 53-year-old man is diagnosed with Paget's disease. Concentration of oxyproline in daily urine is sharply increased, which primarily means intensified disintegration of:
A Collagen
B Keratin
C Albumin
D Haemoglobin
E Fibrinogen

13. A 25-year-old woman complains of deteriorating vision. Examination revealed a defect in accommodation, the pupil is dilated and unresponsive to light. What muscles are functionally disturbed in this case?
A Iris sphincter muscle, ciliary muscle
B Iris sphincter and iris dilator muscles
C Iris dilator muscle, ciliary muscle
D Superior oblique muscle, ciliary muscle
E Lateral rectus muscle, iris sphincter muscle

14. 24 hours after an appendectomy the patient's blood test shows neutrophilic leukocytosis with a regenerative shift. What is the most likely mechanism of absolute leukocytosis development in the patient's peripheral blood?
A Intensification of leukopoiesis
B Immunity activation
C Leukocyte redistribution
D Decreased leukocyte disintegration
E Deceleration of leukocyte migration to the tissues

15. During the exercise testing on a training bicycle, the patient's respiration rate increased. What is the main cause of the changed activity in the respiration centre in this case?
A Increase of CO_2 tension in the blood
B Decrease of CO_2 tension in the blood
C Increase of blood adrenaline levels
D Increase of O_2 tension in the blood
E Decrease of O_2 tension in the blood

16. A 46-year-old man was brought to the hospital specializing in nervous system diseases. The man was provisionally diagnosed with cerebral haemorrhage. The patient presents with frequent spontaneous limb movements intermittent with the state of limb muscle hypertonia. These signs can be explained by the damage to the following brain structures:

A Basal ganglia
B Brain stem
C Hypothalamus
D Hypophysis
E Frontal cortex

17. Immediately after moving from horizontal to vertical position, the heart rate of a 23-year-old man increased by 15 beats per minute, his systolic pressure remained unchanged, while his diastolic pressure increased by 10 mm Hg. What reflex response of the executive structures caused this increase in the diastolic pressure?
A Constriction of the resistance vessels
B Increase of the cardiac output
C Constriction of the resistance and capacitance vessels
D Constriction of the capacitance vessels
E Increase of the stroke volume

18. Blood test shows the following: sodium - 115 mmol/T, chlorides - 85 mmol/T, glucose - 6 mmol/T, total protein - 65 g/L. The first consequence of such changes will be the decrease of:
A Osmotic blood pressure
B Erythrocyte sedimentation rate
C Oncotic blood pressure
D Blood pH
E Circulating blood volume

19. In an experiment, a frog neuromuscular preparation had been processed with a curare-like substance, which led to the disappearance of muscle contractions in response to electrical stimulation. What function of the muscle cell membrane is disrupted by curare-like substances?
A Reception of the mediators in the neuromuscular synapse
B Creation of the electric potentials on the both sides of the membrane
C Maintenance of the internal cell structure, its cytoskeleton
D Creation of a barrier between the intracellular environment and surrounding intercellular fluid
E Change in the permeability for different substances

20. Among lymphocytes there is a population of cells that have membrane receptors to IgM, activated in response to certain antigens, reproduce mitotically, differentiate into plasma cells that produce antibodies (immunoglobulins). Name these cells:
A B lymphocytes
B Memory T cells
C Killer T cells
D Suppressor T cells

Exercise 3. Translate the word combinations into Ukrainian.
The distal convoluted tubule, blood flow disturbance in the classical hepatic lobules, loss of trabecular architecture in the metaphysis of right tibia, disrupted patency of the airways, constriction of the resistance vessels, stage of blood clotting, differentiate into plasma cells, sodium and water retention, disturbed protein metabolism and intensified protein putrefaction, marked muscle rigidity, an isolated squid giant axon; a disturbed speech perception, permeated by

demarcation channels, impaired vision of close objects, lacrimation disorder, distended renal pelvic lumen, intestinal peristalsis.

Exercise 4. Find synonyms of the following words in the tests:

distinct		colorless	
primary		unfilled	
impair		sight	
distended		quantity	
coagulation		streak	

Exercise 5. Fill the table with the missing parts of speech:

verb	**noun**	**adjective**
		productive
	impairment	
		inclusive
apply		
		dangerous
		large
respond		
locate		
	disruption	

Exercise 6. Match the words with their explanations:

accident aspirin bandage emergency fever medicine operation recover wound

1. The acetylated derivative of salicylic acid; used as an analgesic anti-inflammatory drug usually taken in tablet form; used as an antipyretic; slows clotting of the blood by poisoning platelets.
2. A piece of soft material that covers and protects an injured part of the body.
3. An unfortunate mishap; especially one causing damage or injury.
4. A sudden unforeseen crisis (usually involving danger) that requires immediate action.
5. A rise in the temperature of the body; frequently a symptom of infection.
6. Something that treats or prevents or alleviates the symptoms of disease.
7. A medical procedure involving an incision with instruments; performed to repair damage or arrest disease in a living body.
8. Get over an illness or shock.
9. An injury to living tissue (especially an injury involving a cut or break in the skin).

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Тема № 12: **PATHOLOGICAL PHYSIOLOGY. PART I**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у патологічній фізіології.
Основні поняття: емболізм, бляшка, тромбоз, некроз.

I. План

1. Емболізм та його види..

2.Грецькі терміноелементи в пат.фізіології.

II. Практичні заняття, які виконуватимуться

Exercise 1. Read the text:

Embolism

Embolism is the passage through the venous or arterial circulations of any material capable of lodging in a blood vessel and obstructing the lumen. The transported intravascular mass detached from its site of origin is called an embolus.

According to the material of the embolus it can be solid and causes thromboembolism, atheroembolism, tissue (cellular) embolism due to necrosis of tumor, damaged tissue, bacterial embolism, embolism by parasites, embolism by foreign bodies. Liquid embolus leads to fat embolism or amniotic fluid embolism. Decompression sickness (caisson disease) and air embolism are caused by gaseous form of the embolus.

Thromboembolism

Virchow's triad or the **triad of Virchow** describes the three broad categories of factors that are thought to contribute to development of a thrombus:

Hypercoagulability

Hemodynamic changes (stasis, turbulence)

Endothelial injury/dysfunction

A detached thrombus or part of thrombus constitutes the most common type of embolism. These may arise in the arterial or venous circulation. The effects *of arterial emboli* depend upon their size, site of lodgement, and adequacy of collateral circulation. It leads to infarction, gangrene, arteritis and mycotic aneurysm, myocardial infarction and sudden death. The most significant effect *of venous embolism* is obstruction of pulmonary arterial circulation leading to pulmonary embolism.

Unlike venous emboli, which tend to lodge primarily in one vascular bed (the lung), arterial emboli can travel to a wide variety of sites. The major sites for arteriolar embolization are the lower extremities (75%) and the brain (10%), with the rest lodging in the intestines, kidney, spleen. The emboli may obstruct the arterial blood flow to the tissue distal to the site of the obstruction.

This obstruction may lead to infarction. The infarctions, in turn, will lead to different clinical features which vary according to the organ involved.

Pulmonary thromboembolism

Pulmonary embolism is the most common and fatal form of venous thromboembolism in which there is occlusion of pulmonary arterial tree by thromboemboli. Pulmonary emboli are more common in hospitalised or bedridden patients. The majority of emboli arise from the deep veins of the low extremities; most of the fatal ones arise from the ileofemoral veins. Condition that favor the development of pulmonary thromboembolism are: stasis (heart failure, chronic venous insufficiency); injury (trauma, surgery, parturition); hormonal imbalance (oral contraceptive use); advanced age; immobilization (orthopedic, paralysis, bed rest); sickle cell disease.

Consequences of thromboembolism

1. Consequences of pulmonary embolism. These include:

Pulmonary Syndrome (Infarction.) The pulmonary syndrome clinically resembles pneumonia. Pleural effusion is common and often bloody. Pathologically, pyramidal segments of hemorrhagic infarction are seen at the periphery of the lung. Obstruction of terminal branches (endarteries) leads to central *pulmonary hemorrhage.*

Circulatory Syndrome (Without Infarction.) Embolism produces pulmonary hypertension by mechanical blockage of the arterial bed. Reflex vasoconstriction and bronchial constriction due to release of vasoactive substances may contribute to a reduction in the size of the functional pulmonary vascular bed. Whether a patient develops the pulmonary or the circulatory syndrome depends on the thromboembolic load and the availability of circulatory reserve of the bronchial arteries. *Pulmonary hypertension may lead to chronic cor pulmonale and pulmonary arteriosclerosis.* Numerous small emboli may obstruct most of the pulmonary circulation resulting in acute right heart failure (*Acute cor pulmonale).*

Massive Pulmonary Embolism. Massive pulmonary emboli typically cause sudden obstruction of blood flow through one or both of the major pulmonary arteries. The patient often goes into shock immediately - presumably because of certain neurologic reflexes - and may die within minutes. This catastrophe is characteristically precipitated when a patient who has been recuperating from surgery gets out of bed for the first time.

2. **Consequences of emboli in peripheral arteries.** The heart is the most common source of systemic emboli, which usually arise from mural thrombi (in atrial fibrillation, mitral valve disease, myocardial infarction, left ventricular aneurysm, heart failure of any etiology, cardiomyopathy) or diseased valves (bacterial endocarditis, marantic endocarditis).

Clinical and morphological features: arterial emboli to the brain cause strokes; in the mesenteric circulation they cause infarction of the bowel; embolism of an artery of the legs leads

to sudden pain, absence of pulse, and a cold limb; renal artery embolism may infarct the entire kidney but more commonly results in small peripheral infarcts; coronary artery embolism results in myocardial infarctions.

Thus, the effects and sites of arterial emboli are in striking contrast to venous emboli, which are often lodged in the lungs.

Atheroembolism. Atheromatous plaques, especially from aorta, may get eroded to form atherosclerotic emboli. The *pathologic changes* and their effects are: a) Ischemia, atrophy and necrosis, b) Infarcts in the affected organs, c) Gangrene in the lower limbs, d) Hypertension.

Exercise 2. Read the text and answer the questions.

1. What is embolism
2. Name 2 main types of emboli.
3. What are the complications of arterial and venous embolism?
4. Why is venous embolus always occlusive compared to arterial emboli?
5. Who are under the risk of getting pulmonary thromboembolism?
6. What vessels are the sources of emboli in pulmonary thromboembolism?
7. Name the components of Virchow's triade.
8. What complication of pulmonary thromboembolism reminds pneumonia?
9. Describe the morphological features of heart muscle with chronic cor pulmonale.
10. When does the infarction of bowel occur?

Exercise 3. Find and match synonyms from the text.

Obstruct	
Detached	
Leads	
Causes	
Vary	
Develop	
Resemble	
Arise	
Precipitate	
Infarct	

Exercise 4. Read the definitions and choose the proper term given in brackets.

Definitions:

1. The process of a material getting stuck and blocking a blood vessel. (___)

2. A solid or liquid mass that travels through the circulatory system and can cause blockages. (___)

3. The detachment and movement of a mass from its original location to another part of the body. (___)4. The condition of having an excessive tendency to form blood clots. (___)

5. A substance made up of fats and other materials that can block blood vessels. (___)

6. A sudden decrease in blood supply to a tissue due to a blockage in the artery supplying it. (___)

7. The formation of a clot or mass within a blood vessel. (___)

8. A condition where a blood vessel is clogged by a foreign object that traveled through the bloodstream. (___)

9. A serious medical condition caused by a massive blockage in the pulmonary artery. (___)

10. The act of reducing the pressure on a body of gas, which can lead to the formation of bubbles in the bloodstream. (___)

Thromboembolism, Embolus, Detached, Hypercoagulability, Atheroembolism, Infarction, Pulmonary embolism, Embolism, Fat embolism, Decompression sickness

Exercise 5. Match terms with definitions.

Virchow's triad	in medical terms, refers to a state in which there is an excessive tendency for blood to clot. It is characterized by an imbalance in the body's normal coagulation (clotting) processes, leading to an increased risk of blood clot formation, which can potentially lead to conditions such as deep vein thrombosis, pulmonary embolism, or other thrombotic events.
Hypercoagulability	is a blood clot that forms within a blood vessel. It can obstruct the flow of blood and potentially lead to various medical complications, depending on its location and size.
Endothelial injury/dysfunction	in the medical context, refers to the slowing or stagnation of blood flow within a blood vessel. It is a condition where blood moves more slowly than normal, which can contribute to the activation of clotting factors and increase the risk of blood clot formation.
Thrombus	is a localized dilation or bulging of a blood vessel wall that is caused by a bacterial or fungal infection. It occurs when an infection

	weakens the vessel wall, leading to the formation of a weakened area that may enlarge and become susceptible to rupture.
Mycotic aneurysm	damage or impaired function of the inner lining (endothelium) of blood vessels. This condition can disrupt the normal regulation of blood flow, promote inflammation, and contribute to the formation of blood clots within the affected vessels.
Stasis	is a medical term that describes the sudden blockage of a blood vessel by a material that travels through the bloodstream and becomes lodged in a vessel, obstructing blood flow. This material, known as an embolus, can be solid, liquid, or gaseous, and it can lead to various complications depending on where it becomes lodged and the size of the vessel affected.
Thromboembolism	is a concept in medicine that describes the three main factors that contribute to the development of thrombosis, which is the formation of blood clots within blood vessels.
Embolism	refers to the process where an embolus, which is a material such as a blood clot or debris, becomes lodged in a smaller branch of an artery known as an arteriole. This can disrupt blood flow to the tissue supplied by the arteriole, potentially leading to tissue damage, ischemia, or other related complications.
Arteriolar embolization	is a medical term that refers to the formation of a blood clot (thrombus) in one location of the body, which then breaks free and travels through the bloodstream to block a blood vessel in another location. This can lead to restricted blood flow, tissue damage, and potentially serious health consequences depending on where the embolism lodges.

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Електронні інформаційні ресурси

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Тема № 13: **PATHOLOGICAL PHYSIOLOGY. PART II**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у біології.
Основні поняття: атеросклероз, гломерулонефрит, емфізема.

I. План

1.Тестування з пат. фізіології.

2.Особливості перекладу медичної термінології українською.

II. Практичні заняття, які виконуватимуться

Exercise 1. Translate the tests. (Основна [1, с. 158-168])

1. After a collision of two cars, one of the drivers presents with a deformity in the middle third of the left shin. The driver feels extreme pain that exacerbates on attempts to move it. The ends of a broken bone protrude from the open wound, the bone is triangular on section, movements cause the bleeding to intensify. What bone was damaged?

A Tibia
B Fibula
C Femur
D Patella
E Talus

2. A patient presents with acute onset of the disease: high fever and enlarged painful spleen. On the 10th day since the onset the patient developed a maculopapular rash on the abdomen. On the 21st day the patient died of peritonitis. Postmortem study of the body shows deep ulcers in the area of necrotic aggregate lymphoid follicles (Peyer's patches) in the ileum of the deceased. One of the ulcers is perforated and diffuse fibrinopurulent peritonitis is observed. What disease can be suspected in this case?

A Typhoid fever
B Dysentery
C Intestinal amebiasis
D Cholera
E Salmonellosis

3. Autopsy of an 86-year-old woman, who suffered from cerebral atherosclerosis, shows atrophy of her cerebral cortex. Name this type of atrophy based on its cause:

A Insufficient blood supply
B Pressure-induced
C Caused by physico-chemical factors
D Neurogenic
E Dysfunctional

4. An autopsy of a 42-year-old man, who suffered from chronic diffuse bronchitis and died of cardiopulmonary failure, shows large hyperinflated lungs that cover mediastinum with their edges. The lungs do not deflate, are colored pale gray, crunch on section; lung surface does not

straighten out when pressed with a finger, resulting in a permanent depression. Mucopurulent exudate is produced from the bronchial lumen. What is the most likely diagnosis?

A Chronic diffuse obstructive emphysema
B Chronic focal emphysema
C Interstitial emphysema
D Primary idiopathic emphysema
E Vicarious compensatory emphysema

5. Autopsy of a man with tuberculosis has revealed a 3x2 cm large cavity in the superior lobe of the right lung. The cavity was communicating with a bronchus, its wall was dense and consisted of three layers: the internal layer was pyogenic, the middle layer was made of tuberculous granulation tissue, and the external one was made of connective tissue. What is the most likely diagnosis?

A Fibrous cavernous tuberculosis
B Fibrous focal tuberculosis
C Tuberculoma
D Acute focal tuberculosis
E Acute cavernous tuberculosis

6. The dentist examines a pregnant woman. There are 3 round lesions up to 1 cm in diameter on her oral mucosa. The lesions appeared 3 days ago, they have white-gray surface and red margin. The dentist can make the following diagnosis:

A Aphthous stomatitis
B Leukoplakia
C Catarrhal stomatitis
D Necrotizing ulcerative stomatitis
E Gangrenous stomatitis

7. A 28-year-old patient presented with elevated blood pressure, hematuria, and facial edemas. Despite the treatment, the signs of renal failure were exacerbating. 6 months later the patient died of uremia. Microscopy of the kidneys shows proliferation of nephrothelium in the glomerular capsules and proliferation of podocytes that contributes to crescent formation. Sclerosis and hyalinosis of the glomeruli is observed. Make the diagnosis:

A Subacute glomerulonephritis
B Acute pyelonephritis
C Nephrotic syndrome
D Chronic glomerulonephritis
E Acute glomerulonephritis

8. During teeth examination on the lateral surface of the first upper molar there was detected a cone-shaped carious cavity with the base oriented toward the tooth surface and the apex - toward the tooth center. Softened dentin is visible in the floor of the carious cavity. Make the diagnosis:

A Dentin caries
B Enamel caries
C Cement caries

D Tooth erosion
E –

9. A 23-year-old man developed a perforation in his hard palate, a dense formation with clear margins was detected in this area. After a surgery, microscopy of the excised formation shows there a large focus of caseous necrosis surrounded with a granulation tissue with endovasculitis and a cellular infiltration consisting of lymphocytes and epithelioid cells with predominance of plasma cells. What is the most likely disease in this case?
A Syphilis
B Tuberculosis
C Leprosy
D Scleroma
E Sarcoma

10. A 53-year-old woman complains of painful swelling in her left parotid area. The swelling appeared 5 days ago. Objectively the skin in this area is slightly hyperemic and tender. Excretory duct of the salivary gland produces a small amount of viscous turbid yellow-green liquid. Microscopy detects a diffuse infiltration of the gland with segmented neutrophils. Make the diagnosis:
Acute suppurative parotitis
A Epidemic parotitis
B Sjogren syndrome
C Glandular adenoma
D Acute serous parotitis
E
11. A 65-year-old man presents with acute mandibular osteomyelitis. 3 days after the disease onset he developed marked edema of skin and soft submandibular cervical tissues. Microscopically there is a diffuse infiltration with neutrophils. What complication of the main disease occurred in the patient's skin tissues?
A Phlegmon
B Abscess
C Carbuncle
D Furuncle
E Actinomycosis

12. Oral examination revealed dark yellow and brown spots and stripes on the labial and lingual surfaces of the patent's teeth; more than the half of the dental surface is affected; enamel and dentin are destroyed. What diagnosis is the most likely?
A Fluorosis
B Metastatic calcification
C Dental calculus
D Cuneiform defect
E Dystrophic calcification

13. Mother of a 4-year-old child complains that the child developed elevated body temperature, tenesmus, diarrhea, and abdominal pain attacks. The child attends a preschool facility. Laboratory

analysis detected mucus and blood admixtures in the child's feces. Name the changes that occur in the gastrointestinal tract during dysentery:

A Colitis
B Gastritis
C Enterocolitis
D Enteritis
E Gastroenteritis

14. During autopsy of the patient, who died of cardiovascular failure, the patient's right foot is darkly colored. The vessels of the patient's thigh are partially obstructed by grayish-red clots. On the vessel walls there are yellowish-gray spots and fibrous plaques, some of which are of stony density. What clinicopathological type of atherosclerosis was complicated in the patient?

A Atherosclerosis of lower extremities
B Cerebral atherosclerosis
C Atherosclerosis of aorta
D Vascular intestinal atherosclerosis
E Renal atherosclerosis

15. A 35-year-old man had been suffering from bronchial asthma for a long time. Eventually he developed a status asthmaticus that became lethal. Examination of section materials shows a bronchiolar spasm in the lungs. The bronchiolar walls show signs of cellular infiltration with predominance of eosinophilic leukocytes and lymphocytes, labrocytes with signs of degranulation are observed. What mechanism of hypersensitivity is the cause of these changes?

A Reaginic reaction
B Antibody-dependent
C Immune complex
D Cell-mediated cytotoxicity
E –

16. Autopsy of a 60-year-old woman, who for a long time had been suffering from essential hypertension, shows significantly diminished kidneys (weight of both kidneys is 80 g) with finely granular surface. Uniform renal cortical thinning can be observed on section. Name the described changes in the kidneys:

A Primary contracted kidney
B Pyelonephritic contracted kidney
C Secondary contracted kidney
D Amyloid contracted kidney
E Diabetic nephrosclerosis

17. Autopsy of a 3-year-old child shows a tumor in the cerebellum. The tumor has no clear margins separating it from the surrounding tissues. Histologically it is made of small atypical cells with hyperchromic nuclei. This tumor is most likely a:

A Medulloblastoma
B Medullary sarcoma
C Cancer metastasis

D Sarcoma metastasis
E Glioblastoma

18. Autopsy revealed a large wedge-shaped patch of a dense dark red tissue with clear margins in the upper lobe of the right lung. Histological examination detected there necrosis of the alveolar walls; the alveolar lumen is tightly packed with erythrocytes. What process occurred in the lungs?
A Hemorrhagic infarction
B Carneous degeneration
C Gangrene
D Hemorrhage
E Atelectasis

19. Regional lymph nodes surrounding an infected wound are enlarged. Histological examination shows increased number of macrophages, lymphocytes, and lymphatic follicles in the cortical layer of the lymph nodes, as well as a large amount of plasma cells. What process in the lymph nodes is indicated by these histological changes?
A Antigen stimulation
B Acquired deficiency of lymphoid tissue
C Congenital deficiency of lymphoid tissue
D Neoplastic aberration
E Transplant rejection

20. A patient has gradually developed a skin plaque on his face. In the center of this plaque there are necrotic patch and an ulcer. Histopathological analysis of the biopsy material reveals proliferation of atypical epithelial cells with large number of pathologic mitoses. What is the most likely diagnosis?
A Skin cancer
B Sarcoma
C Papilloma
D Trophic ulcer
E Fibroma

Exercise 2. Translate word-combinations from English into Ukrainian.

Signs of fatty degeneration; flat and cylindrical bones; dull, matt, and flaccid cardiac muscle; multilayer, strongly keratinized pavement epithelium; increased blood viscosity; uterine bleeding after delivery; to reveal enlarged solid spleen; nutmeg liver; to detect a dense node with clear margins; to be covered with membranous deposits; to contain fibrin threads; delayed tooth eruption; kidneys with finely granular surface; spots and stripes on the surfaces of the patent's teeth; excretory duct of the salivary gland; the floor of the ulcerative cavity; crescent formation; pyogenic layer; to crunch on section; focal non-suppurative inflammation.

Exercise 3. Find the synonyms from the tests.
purulent –
thrombus –
adipose –
change –

decompensation –
substance –
tunic –
edge –
childbirth –
investigation –

Exercise 4. Fill in the table.

NOUN	VERD	ADJECTIVE
	investigate	
		exudative
location		
		alterable
	feel	
dilatation		
		moist
	diminish	
	obstruct	
		communicative

Exercise 5. Translate sentences from Ukrainian into English.

1. Гломерулонефрит це вогнищеве негнійне запалення ниркових клубочків з характерними нирковими ознаками.
2. Легені не спадають, забарвлені в блідо-сірий колір, на розрізі хрустять.
3.У жінки, яка страждала на гіпертонію, було виявлено значно зменшені нирки з дрібнозернистою поверхнею.
4. Макроскопія виявила щільний білий вузол, діаметром 4 см, з чіткими краями в зразку тканини.
5. У пацієнта з хронічною серцевою недостатністю спостерігається підвищена в'язкість крові.
6. Альвеолярні порожнини містять фібринові нитки, нейтрофіли та еритроцити.
7. У печінці є ознаки жирової дегенерації та лейкемічні інфільтрати.
8. Ознакою раннього рахіту є затримка прорізування зубів у дітей.
9. Права легеня щільна і збільшена, а плевра її покрита сіруватим мембранним налітом.
10. При гострому гнійному паротиті вивідна протока слинної залози виробляє невелику кількість в'язкої рідини.

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1.Одеський національний медичний університет: https://onmedu.edu.ua/
2.Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 14: **PATHOLOGICAL PHYSIOLOGY. PART III**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології у пат. фізіології.

Основні поняття: розлад нервової системи, леукопенія.

І.План

1.Тестування з пат. фізіології.

2.Синонімія у пат. фізіології.

ІІ. Практичні заняття, які виконуватимуться

Exercise 1. Translate the tests. (Основна [1, с. 140-151])

1. A patient was hospitalized in a comatose state. The patient has a 5-year-long history of diabetes mellitus type 2. Objectively respiration is noisy, deep, with acetone breath odor. Blood glucose is 15.2 mmol/L, ketone bodies - 100 micromol/L. These signs are characteristic of the following diabetes complication:

A Ketoacidotic coma
B Hepatic coma
C Hyperglycemic coma
D Hypoglycemic coma
E Hyperosmolar coma

2 A 63-year-old man suffers from esophageal carcinoma, presents with metastases into the mediastinal lymph nodes and cancerous cachexia. What pathogenetic stage of neoplastic process is observed in the patient?

A Progression
B Promotion
C Transformation
D Initiation
E –

3 After a prolonged attack of severe headache the patient lost mobility in his left arm and leg. Muscle tone is decreased in the affected limbs, the muscles are spasmed, spinal tendon reflexes are acutely intensified, reflex zones are increased. What nervous system disorder can be observed in this patient?

A Central paralysis
B Peripheral paralysis
C Extrapyramidal paralysis
D Flaccid paralysis
E Reflex paralysis

4 Hematologic study shows the following pattern: erythrocytes - 2, 8 1012/L, Hb - 80 g/L, color index - 0.85, reticulocytes - 0,1%, platelets - 160 thousand per microliter, leukocytes - 60 109/L. Basocytes - 2%,eosinophils - 8%, promyelocytes - 5%, myelocytes - 5%, juvenile - 16%, stab neutrophils - 20%, segmented neutrophils - 34%, lymphocytes - 5%, monocytes - 5%. This clinical presentation indicates the following blood pathology:

A Chronic myeloleukemia
B Acute myeloleukemia
C Hypoplastic anemia

D Undifferentiated leukemia
E Hemolytic anemia

5 Antileukocytic antibodies are detected in the blood of a patient with leukopenia. What type of Coombs-Gell hypersensitivity reaction developed in this case?
A Cytotoxic
B Stimulating
C Anaphylactic
D Delayed-type hypersensitivity
E Immune complex-mediated

6 A patient with obliterating endarteritis has undergone a ganglionic sympathectomy. Positive therapeutic effect of this surgery is associated with development of arterial hyperemia of the lower limbs, which can be described as:
A Neuroparalytic
B Neurotonic
C Metabolic
D Reactive
E Working

7 In an experiment a laboratory rat was subjected to a stress factor (electric current), which resulted in muscular hypotonia, arterial hypotension, hypothermia, and hypoglycemia in the animal. What period of general adaptation syndrome is it?
A Shock phase
B Antishock phase
C Resistance stage
D Exhaustion stage
E -

8 A 14-year-old adolescent has diphtheria. During the peak of the disease against the background of acute drop in body temperature and tachycardia the blood pressure is 70/50 mm Hg. What type of vascular tone disturbance is it?
A Acute hypotension
B -
C Chronic hypotension
D Somatoform autonomic dysfunction
E Essential hypotension

9 24 hours after an appendectomy the patient's blood test shows neutrophilic leukocytosis with a regenerative shift. What is the most likely mechanism of absolute leukocytosis development in the patient's peripheral blood?
A Intensification of leukopoiesis
B Leukocyte redistribution
C Decreased leukocyte disintegration
D Deceleration of leukocyte migration to the tissues
E Immunity activation

10 A 59-year-old man, a business manager, developed intense burning retrosternal pain that irradiates to the left arm. The pain occurred in the evening after the tax audit. 15 minutes later the

patient's condition normalized. What mechanism of angina pectoris development is leading in this patient?

A Increased level of blood catecholamines
B Coronary atherosclerosis
C Intravascular aggregation of blood cells
D Coronary artery thrombosis
E Functional cardiac overload

11 A 30-year-old person has been stung by a bee. The stung area exhibits edema, hyperemia, and elevated temperature. What is the initial pathogenetic factor of inflammatory edema in this case?

A Increase of microvascular permeability
B Increase of osmotic pressure in the inflammation focus
C Decrease of oncotic blood pressure
D Increase of capillary blood pressure
E Disturbed lymphatic efflux

12 A 30-year-old woman developed facial edemas. Examination detected proteinuria (5.87 g/L), hypoproteinemia, dysproteinemia, and hyperlipidemia. Such combination of signs is characteristic of:

A Nephrotic syndrome
B Nephritic syndrome
C Chronic pyelonephritis
D Acute kidney failure
E Chronic kidney failure

13 An unconscious young man in the state of morphine intoxication has been brought into an admission room. The patient's respiration is slow and shallow due to suppression of the respiratory center. What kind of respiratory failure occurred in this case?

A Ventilatory disregulation
B Ventilatory obstruction
C Ventilatory restriction
D Perfusion
E Diffusion

14 A man has been working for a long time in oil processing. What type of carcinogens does he encounter at his workplace?

A Polycyclic aromatic hydrocarbons
B Amino-azo compounds
C Nitrosamines
D Biological carcinogens
E Amines

15 A patient has been suffering from bronchial asthma for 15 years. What changes in the patient's leukogram can be expected in this case?

A Eosinophilia

B Basophilia
C Leukocytosis
D Leukopenia
E Left shift

16 A married couple came for a genetic counseling. The husband suffers from insulin- independent diabetes mellitus, while the wife is healthy. What is the probability of their child developing insulin-independent diabetes mellitus?
A Higher than in the population
B The same as in the population
C Lower than in the population
D D. 100%
E E. 50%

17 A laboratory rat with chronic kidney failure presents with osteoporosis, pathologic calcification of the internal organs, and arterial hypertension. These disturbances are associated with increased activity of the following hormone:
A Parathyroid hormone
B Thyroxin
C Triiodothyronine
D Calcitonin
E Adrenaline

18 A patient is diagnosed with severe B12- deficiency anemia resulting in disturbed hematopoiesis and appearance of atypical erythrocytes in the blood. The patient has a history of total gastric resection. This diagnosis can be confirmed if the following cells are present in the peripheral blood:
A Megalocytes
B Microcytes
C Elliptocytes
D Normocytes
E Anulocytes

19 A patient with asphyxia after a brief respiratory arrest developed single infrequent respirations with passive expiration, after which he stopped breathing completely. What type of respiration was observed in this case?
A Gasping respiration
B Apneustic respiration
C Kussmaul respiration
D Cheyne-Stokes respiration
E Biot respiration

20 A 3-year-old child has been brought by ambulance to the intensive care unit of the infectious diseases hospital. On examination the child is in severe condition, skin and mucosa are dry, tissue turgor is reduced. The patient's history states that profuse diarrhea and recurrent vomiting were observed throughout the previous day after the child had eaten food products of poor quality. What type of salt and water imbalance is likely to have developed in the patient?

A Hypoosmolar dehydration
B Isoosmolar dehydration
C Hyperosmolar hyperhydration
D Isoosmolar hyperhydration
E Hypoosmolar hyperhydration

Exercise 2. Translate word-combinations from English into Ukrainian.

Acetone breath odor; to loss mobility in an arm; the peak of the disease; initial pathogenetic factor of inflammation; to bring into admission room; shallow respiration; increased neuromuscular excitement; to undergo a resection; appearance of erythrocytes in the blood; to have a history of some diseases; to confirm the diagnose; to develop tetanic convulsions and dehydration; to complain of heartburn, sour eructation epigastric pain; pale and numb limb; substance with vasodilating and pruriginous effect; terminal state of the patient; a lacerated wound; disturbance of total blood volume; shortness of breath; to be accompanied with cardiac cavity enlargement.

Exercise 3. Find the synonyms from the tests.

dizziness –
breathlessness –
complication –
insufficiency –
emesis –
perspiration –
fainting –
pruriginous –
injury –
belching

Exercise 4. Fill in the table.

NOUN	VERB	ADJECTIVE
		thick
	odorize	
		connective
irradiation		
		reddish
exhaustion		
	disturb	
		enlarged
deterioration		
	improve	

Exercise 5. Translate the sentences from Ukrainian into English.

1.Хворий був доставлен до лікарні з рваною раною щелепо-лицьової ділянки.
2.Гістамін виробляється під час алергічної реакції і має судинорозширювальну та сверблячу дію.
3.Через механічну травму рука стала блідою і онімілою.
4.Хворі з виразковою хворобою шлунку скаржаться на епігастральний біль, печію та кислу відрижку.
5. Пацієнту, який страждає дифузним зобом, необхідно пройти резекцію щитовидної залози.

6. Знижене вироблення парагормону супроводжується посиленим нервово-м'язовим збудженням.
7.Для підтвердження діагнозу пацієнта направили на генетичну консультацію.
8.Після сильного токсикозу з виснажливою блювотою у вагітної жінки розвинулися тетанічні судоми та зневоднення.

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2.Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 15: **CIRRHOSIS**

Мета: ознайомити здобувачів вищої освіти з особливостями вживання та перекладу медичної термінології при розгляді цирозу.
Основні поняття: цироз, регенерація, фіброз, фіброзні тканини.

І.План

1.Цироз та його особливості.

2.Синонімія при розгляді цирозу.

ІІ. Практичні заняття, які виконуватимуться

Exercise 1. Read the text and answer the questions bellow.

Cirrhosis: Understanding a Complex Liver Disease

Cirrhosis is a progressive liver disease characterized by the replacement of healthy liver tissue with fibrosis, resulting in impaired liver function. This condition has multifaceted causes, intricate pathogenesis, potential complications, and diverse treatment approaches.

Excessive and prolonged alcohol consumption is a leading cause of cirrhosis. Alcohol damages liver cells and triggers inflammation, paving the way for fibrosis. Chronic viral hepatitis infections (B, C, and D) harm the liver's cells and lead to its inflammation. The build-up of fat in the liver, often associated with obesity and metabolic syndrome, can progress to cirrhosis. The immune system mistakenly attacks liver cells, causing inflammation, known as Autoimmune Hepatitis, and cirrhosis over time. Hemochromatosis, as a genetic disorder, leads to excessive iron absorption, which accumulates in the liver and causes damage. Finally, Wilson's Disease, another inherited disorder, results in copper accumulation in the liver, leading to this disease.

The development of cirrhosis involves a complex interplay of inflammation, fibrogenesis, and regenerative processes. Hepatic stellate cells play a central role in fibrosis. These cells transform into myofibroblasts, leading to excess extracellular matrix production and scarring. Histologically, cirrhosis is characterized by the presence of regenerating nodules surrounded by fibrous tissue.

Cirrhosis often presents with unexplained fatigue and weakness, yellowing of the skin and eyes due to impaired bilirubin processing, abdominal pain, and impaired clotting factors, resulting in easy bruising and prolonged bleeding. Fluid retention can lead to swelling in the ankles and legs, bile build-up may cause intense itching, and spider-like blood vessels may appear on the skin. Urine may become dark-coloured, and faeces become pale. Another characteristic sign of cirrhosis is Caput Medusae - distended and visible veins around the navel, resembling the head of Medusa in Greek mythology.

Probable complications of cirrhosis include portal hypertension, ascites, oesophageal varices, hepatic encephalopathy, hepatorenal syndrome, and liver cancer (Hepatocellular Carcinoma). It may also lead to hormonal changes. In men, these changes manifest as gynecomastia, testicular atrophy, and impotence. Women may encounter amenorrhea and other menstrual irregularities, such as heavy bleeding or prolonged periods, hirsutism, and Polycystic Ovary Syndrome.

According to the clinical picture mentioned above, the diagnosis can be confirmed by the following procedures:

Liver Function Tests: Elevated liver enzymes (AST, ALT), reduced albumin levels, and prolonged clotting times are common biochemical indicators of cirrhosis.

Imaging: Ultrasound, CT scans, or MRI can visualize liver changes, ascites, and other complications.

Liver Biopsy: A sample of liver tissue is examined under a microscope to confirm cirrhosis and assess its severity.

Endoscopy: Used to detect oesophageal varices.

FibroScan: A non-invasive method to evaluate liver fibrosis.

Cirrhosis is incurable liver damage; therefore, the treatment plan depends on its aetiology, aiming at preventing complications and may include the following: for alcoholic cirrhosis, abstinence from alcohol is imperative to halt disease progression; in cases of viral hepatitis-related cirrhosis, antiviral medications are used to manage the infection; maintaining proper nutrition is crucial, as it often leads to malnutrition; some drugs, like diuretics and beta-blockers, are prescribed to manage such complications as ascites and portal hypertension; in advanced cases, a liver transplant may be the only viable option.

Exercise 2. Answer the questions:

1. What are the primary causes of cirrhosis discussed in the text?
2. Explain the role of hepatic stellate cells in the development of cirrhosis.
3. What are the histological characteristics of cirrhosis?
4. How does cirrhosis affect liver function, and what are the symptoms associated with it?
5. Can you name some common complications of cirrhosis? Describe them.
6. What are the potential hormonal changes seen in men and women with cirrhosis?
7. How is cirrhosis diagnosed?
8. What are the key principles of managing cirrhosis?
9. Discuss the importance of abstinence from alcohol in treating alcoholic cirrhosis.
10. Under what circumstances might a liver transplant be considered as a treatment option for cirrhosis?

Exercise 3. Find English equivalents to the following words and word-combinations:
порушення функції печінки, вживання алкоголю, прокладаючи шлях, накопичення жиру, ожиріння, надмірне всмоктування заліза, спадкове захворювання, мідь, зірчасті клітини, складна взаємодія, рубцювання, надмірне (легке) утворення синців, затримка/накопичення рідини, сильний свербіж, варикозне розширення вен стравоходу, атрофія яєчок, зупинити розвиток хвороби

Exercise 4. Match the synonyms.

impaired	a. restraint
harm	b. debilitated
ascites	c. diverse
trigger	d. evaluate
abstinence	e. damage
crucial	f. possible
multifaceted	g. face
encounter	h. activate
assess	i. vital
viable	j. fluid retention

Exercise 5. Read the definitions and choose the proper term:
pathogenesis, bilirubin, Caput Medusae, AST and ALT, hepatic stellate cells oesophageal varices, hepatic encephalopathy, gynecomastia, amenorrhea, hirsutism

1. Enlarged veins in the gullet.
2. A cluster of swollen veins around the belly button, and they branch out from a central point.
3. The growth of excessive male-pattern hair in women.
4. A brain dysfunction caused by liver insufficiency and/or portal-systemic blood shunting.
5. The origination and development of a disease.
6. The absence of menstruation, often defined as missing one or more menstrual periods.

7. Aspartate aminotransferase and alanine aminotransferase are enzymes found mainly in the liver.
8. An increase in the amount of breast gland tissue in boys or men, caused by an imbalance of the hormones oestrogen and testosterone.
9. Resident perisinusoidal cells in the subendothelial space between hepatocytes and sinusoidal endothelial cells (SEC) that contribute to hepatic development, regeneration, immune responses, angiogenesis, and storage of vitamin A.
10. A yellowish pigment that is made during the breakdown of red blood cells.

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Тема № 16: **ALLERGY**.

Мета: ознайомити здобувачів вищої освіти з визначенням алергії, її видами за патогенезом, діагностикою, лікуванням та заходів з запобігання ускладнень англійською мовою.

Основні поняття: патологічна фізіологія, алергія

І. План

1. Вивчення активної лексики за темою. Визначення алергії, порівняльний аналіз її видів за патогенезом, діагностики, лікування та заходів з запобігання ускладнень.

2. Активізація застосування ГМ: часові форми дієслів, модальні дієслова, пасивний стан тощо.

3. Виявлення алергічних тригерів на прикладах ситуативних завдань.

ІІ. Практичні завдання, які виконуватимуться

Exercise 1. Read the text and answer the questions.

Allergies are a widespread and complex group of conditions that involve the immune system's abnormal response to normally harmless substances, known as allergens. These allergens can trigger a range of symptoms, varying from mild to severe, affecting various organs and systems in the body.

Both genetic and environmental factors contribute to the development of allergies. Genetic predisposition plays a role in determining an individual's susceptibility to allergies. The interplay between genetics and environmental exposures, such as microbial diversity, pollution, and early-life exposures, influences the development of allergic diseases.

Allergic reactions can be categorized into four major types:

Type I Hypersensitivity: This is an immediate, IgE-mediated reaction, often referred to as anaphylaxis. Common examples include allergic rhinitis (hay fever), asthma, and severe allergic reactions to foods, insect stings, or medications.

Type II Hypersensitivity: This involves antibody-mediated cell destruction, as seen in autoimmune hemolytic anemia and some drug reactions.

Type III Hypersensitivity: Immune complexes cause inflammation and tissue damage. Lupus and certain forms of vasculitis are examples of this type.

Type IV Hypersensitivity: This delayed-type reaction involves T-cell activation, seen in contact dermatitis, tuberculin skin tests, and some drug reactions.

Common Allergens:

Pollen: Responsible for allergic rhinitis (hay fever) and allergic conjunctivitis.

Dust Mites: Common triggers for allergic rhinitis and asthma.

Animal Dander: Proteins found in skin cells, urine, and saliva of pets that can cause allergic reactions.

Insect Stings: Venom from bee, wasp, hornet, and fire ant stings can lead to severe allergic reactions.

Foods: Common allergens include peanuts, tree nuts, shellfish, eggs, milk, and wheat.

Medications: Certain drugs, such as antibiotics and NSAIDs, can cause allergic reactions.

Latex: Found in rubber gloves, condoms, and medical devices, latex can trigger allergies.

Allergic reactions can manifest in various organs and systems, including the respiratory tract, skin, gastrointestinal tract, and cardiovascular system. Diagnosis involves a thorough clinical history, skin prick testing, blood tests to measure allergen-specific IgE levels, patch testing for contact dermatitis, and challenge tests under controlled conditions. Accurate diagnosis is essential for developing effective treatment strategies.

Management of allergies involves a multimodal approach. Avoidance of allergens is fundamental, but not always feasible. Medications, including antihistamines, corticosteroids, leukotriene inhibitors, and bronchodilators, help alleviate symptoms. Allergen-specific immunotherapy, or "allergy shots," aims to desensitize the immune system to specific allergens over time. For severe reactions, emergency epinephrine administration is crucial.

The field of allergies continues to evolve, with ongoing research focusing on genetics, environmental factors, microbiome interactions, and the development of targeted therapies. Precision medicine approaches aim to personalize treatment strategies based on individual characteristics and allergen profiles. Additionally, exploring the global impact of allergies in the context of changing environmental and lifestyle factors is paramount for shaping public health policies.

A solid understanding of allergies is essential for medical students. By recognizing different types of allergic reactions, identifying common allergens, and learning about diagnostic and management strategies, future healthcare professionals can effectively diagnose, treat, and educate patients with allergies, thereby improving their quality of life.

1. What are allergens, and how do they trigger allergic reactions?

2. How do allergies manifest in terms of the severity of symptoms?

3. How does genetic predisposition contribute to an individual's susceptibility to allergies?

4. What is the significance of the interplay between genetics and environmental exposures in allergic disease development?

5. Can you name and describe the four major types of allergic reactions?

6. Give examples of allergens that can cause Type I Hypersensitivity reactions.

7. What is the delayed-type reaction in Type IV Hypersensitivity, and where can it be observed?

8. Name some common allergens that can lead to allergic rhinitis.

9. How can allergic reactions be diagnosed accurately?

10. What are the different approaches to managing allergies?

11. What is the purpose of allergen-specific immunotherapy or "allergy shots"?

12. How is the field of allergies evolving in terms of research and treatment strategies?

Exercise 2. Choose the correct verb form based on subject-verb agreement:

1. Allergies (affects/affect) people of all ages.
2. Each of these foods (contain/contains) potential allergens.
3. The list of common allergens (have/has) been updated recently.
4. Dust mites (is/are) tiny creatures that can trigger allergic reactions.
5. Environmental factors (play/plays) a significant role in allergy development.
6. The pollen from trees (cause/causes) hay fever symptoms.
7. Insect stings (can/can't) lead to severe allergic reactions in some individuals.
8. My sister and I (suffers/suffer) from pollen allergies.
9. Not only the doctor but also the nurse (is/are) knowledgeable about allergies.
10. The impact of allergies on public health (is/are) a growing concern.

Exercise 3. Complete the sentences with the appropriate relative pronoun:

1. The medication (that/which) caused the allergic reaction has been discontinued.
2. The patient, (whose/who) family has a history of allergies, is concerned.
3. This is the doctor to (whom/whose) I've been going for allergy treatment.
4. The symptoms (that/who) the patient experienced were quite severe.
5. The house (where/in which) they lived had a high level of dust mites.
6. The pollen, (that/which) comes from trees and flowers, triggers my allergies.
7. The nurse (who/whom) treated me was very attentive.
8. The allergist, (who/whose) I consulted, recommended avoiding certain foods.
9. The patient, (whose/who) had an allergic reaction, was given antihistamines.
10. The reaction (that/which) the patient had was unexpected.

Exercise 4. Use the appropriate modal verb to complete the sentences:

1. Patients with severe allergies (should/must) carry an epinephrine auto-injector.
2. Allergies (might/can) lead to chronic conditions if not managed properly.
3. You (can't/mustn't) ignore allergy symptoms, as they may worsen.
4. The doctor said I (shouldn't/ought to) be exposed to pollen for extended periods.
5. Allergy shots (can/may) help desensitize the immune system over time.
6. People with allergies (ought to/must) be cautious around potential triggers.

7. Patients (could/must) undergo skin prick tests to identify allergens.
8. Individuals who have allergies (should/may) be aware of cross-reactivity among certain foods.
9. It (might/must) take some time for the allergy medication to take effect.
10. You (mustn't/shouldn't) self-diagnose allergies without consulting a medical professional.

Exercise 5. Rewrite the sentences in passive voice:

1. Doctors commonly prescribe antihistamines to manage allergy symptoms.
2. Allergens trigger a wide range of symptoms, varying from mild to severe.
3. Researchers are conducting ongoing studies on the relationship between allergies and the environment.
4. Medical professionals use challenge tests to diagnose allergies under controlled conditions.
5. Some individuals experience allergic reactions when they are exposed to pollen.
6. The immune system reacts to allergens by producing histamine.
7. The pollen from grasses can cause hay fever symptoms in many people.
8. The doctor recommends avoiding known allergens to prevent allergic reactions.
9. People with allergies should be educated about potential triggers.
10. The nurse administered the allergy shot to the patient during the appointment.

Exercise 6. Rewrite the sentences in reported speech:

1. The doctor said, "Avoid contact with animal dander if you have allergies."
2. She asked, "Have you ever experienced an allergic reaction before?"
3. "I am allergic to shellfish," he told the waiter.
4. The allergist said, "You should take these medications regularly."
5. "Can pollen cause asthma symptoms?" she inquired.
6. The patient said, "I have a history of pollen allergies in my family."
7. He asked, "Will the allergy shots help me with my symptoms?"
8. "Did you receive a skin prick test?" the nurse asked.
9. "May I have an epinephrine auto-injector?" she asked the pharmacist.
10. The doctor asked, "Have you been exposed to any new allergens recently?

Exercise 7. Provide definitions for the following terms within the context of allergies:

1. **Anaphylaxis:**
   _____
2. **Desensitize:**
   _____
3. **Cross-reactivity:**
   _____
4. **Immunotherapy:**
   _____
5. **Histamine:**
   _____
6. **Patch testing:**
   _____
7. **Challenge test:**
   _____
8. **Auto-injector:**
   _____
9. **Bronchodilators:**
   _____
10. **Precision medicine:**
    _____

Exercise 8. Identifying Allergic Triggers

Instructions: Read the following patient cases and identify the potential allergens that might be responsible for their allergic reactions. Write down the likely allergen for each case.

Case 1: A 30-year-old patient presents with recurring episodes of sneezing, itchy and watery eyes, and a runny nose, particularly during the spring season.

Case 2: A 10-year-old child develops hives and itching all over the body shortly after eating a meal containing seafood.

Case 3: A 40-year-old individual experiences shortness of breath, wheezing, and chest tightness after spending time in a dusty basement.

Case 4: A 25-year-old patient complains of intense itching and redness at the site of a recent bee sting, which is spreading to other parts of the body.

Case 5: A 50-year-old patient with a history of autoimmune disorders presents with joint pain, skin rash, and blood tests indicating elevated levels of certain antibodies.

Case 6: A 5-year-old child develops a severe allergic reaction, including difficulty breathing and swelling, shortly after being stung by a wasp.

Case 7: A 20-year-old patient experiences gastrointestinal symptoms such as cramps and diarrhea after consuming certain fruits and vegetables.

Case 8: A 45-year-old patient exhibits severe coughing, wheezing, and shortness of breath when exposed to pet cats.

Case 9: A 60-year-old patient with a history of allergies notices worsening symptoms of sneezing and nasal congestion when spending time outdoors.

Case 10: A 35-year-old individual develops a localized rash and redness on the skin after wearing latex gloves during a medical procedure.

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Тема № 17: **BIOCHEMISTRY. PART I.**

Structures and Functions of Proteins. Enzymes.

Мета: ознайомити здобувачів вищої освіти з ферментами, вітамінами та мінералами англійською мовою; медичними термінами, що стосуються біологічної хімії: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження..

Основні поняття: біологічна хімія, білки, ферменти.

І. План

1. Складання резюме до тексту.

2. Розвинення навичок аналітичного і пошукового читання та перекладу.

ІІ. Практичні завдання, які виконуватимуться

Exercise 1. a) Make nouns from given verbs with the help of suffix -ion (-tion).
Absorb, prepare, activate, preserve, constrict, inhibit, denaturate, coagulate, irritate, agglutinate, ovulate, transfuse, indicate, concentrate, obstruct, dilate, inflame, aggravate, associate, digest.
b) Make nouns form given adjectives with the help of suffix -(i)ty.
Able, acid, severe, stable, proper, persist, capable, mortal, morbid, permeable, regular, stable, sensitive, reactive, pure, susceptible, major, soluble, compatible, irreversible.

Exercise 2. Read the text and find synonyms to the following words and word combinations.
Dissoluble, elementary, compound, to consist of, deposit, infuse, to form clots, combine, resistance, iron-containing protein, alternative to, transmit, disintegration, convertible, suppression, characteristic, to cause, watered, to equate with, to give in, warming up.

Structures and Functions of Proteins. Enzymes

The major object of biochemistry is the complete understanding at the molecular level of chemical processes associated with living cells.

Living cells produce an impressive variety of macromolecules (proteins, nucleic acids, polysaccharides). These macromolecules are biopolymers constructed of monomer units, or building blocks. All proteins are high-molecular-weight polypeptides. Simple proteins contain only amino acids. Complex proteins contain additional, non-amino acid material, such as heme, vitamin derivatives, lipid, or carbohydrate.

Proteins are classified according to their shape: fibrous (e.g. a-keratin from hear, collagen) and globular (myoglobin, hemoglobin, ribonuclease, etc.); the functional properties and the solubility.

By chemical structure amino acids are divided into two groups: 1. Acyclic, aliphatic amino acids. 2. Cyclic amino acids.

According to their solubility and functional properties proteins are divided into *Simple Proteins*: these are proteins which on complete hydrolysis yield only into amino acids. *Conjugated Proteins*: these are proteins which in addition to amino acids contain a nonprotein group in their structure.

Major subclasses of **simple proteins** are as following:
Albumins
1.These are proteins which are soluble in water and dilute salt solutions.

2. They are coagulated by heat and turn to products that are insoluble in water and salt solutions.
3. The "albumins" may be precipitated in saturating solution with ammonium sulfate.
4. Albumins have low isoelectric pH of 4.7 and therefore they are acidic proteins at the pH 7.4.
5. They are generally deficient in glycine.

Globulins

1. Globulins are insoluble in water, but soluble in dilute neutral salt solution.
2. They are also coagulable on heating.
3. Globulins are precipitated by half saturation with ammonium sulfate or by full saturation with sodium chloride.
4. Globulins bind with heme, lipids, metals, carbohydrates.

Protamines

1.These are small molecules soluble in water and non-coagulable on heating.
2. They do not contain cysteine, tryptophan and tyrosine, but they are rich in arginine.
3. Their isoelectric pH is about 7.4, and they exist as basic proteins in the body.
4. They combine with nucleic acids to form nucleoproteins.

Histones

1.These are rich in arginine and histidine.
2. They are basic proteins with alkaline isoelectric pH.
3. They are soluble in water, dilute acids and salt solutions, but insoluble in ammonia.
4. They do not readily coagulate on heating.
5. They form conjugated proteins with nucleic acids (DNA) and porphyrins. They act as repressors of template activity of DNA in the synthesis of RNA.
6. The protein part of hemoglobin, *globin* is an atypical histone having a predominance of histidine and lysine instead of arginine.

Gliadins (Prolamines)

Alcohol soluble plant proteins are insoluble in water or salt solutions and absolute alcohol, but they dissolve in 50-80% ethanol.
They are very rich in proline, but poor in lysine.

Glutelins

These are plant proteins, insoluble in water or neutral salt solutions, but soluble in dilute acids or alkalies.
They are rich in glutamic acid.
They are large molecules and can be coagulated by heat.

Scleroproteins or Albuminoids

These are fibrous proteins with great stability and very low solubility and form supporting structures of animals. Keratins, collagens and elastins are found in this group.

Conjugated Proteins are simple proteins combined with a non-protein group called *prosthetic group*. Protein part is called apoprotein, and the entire molecule is called holoprotein.
Nucleoproteins are most abundant in tissues having large proportion of muscular material such as yeast, asparagus tips in plants and thymus, other glandular organs and sperm.
Mucoproteins or Mucoids are simple proteins combined with mucopolysaccharides. They are water soluble and hardly denatured on heating. Insoluble mucoproteins are found in egg white, vitreous liquor and submaxillary glands.
Glycoproteins include mucins, immunoglobulins, complements and many enzymes.
Chromoproteins are proteins that contain coloured substance, such as hemoprotein, hemoglobin, cytochromes, catalase, peroxidase and others.
Phosphoproteins are proteins with phosphoric acid.
Lipoproteins are formed in combination with lipids. Lipids are lecithin, cephalin, fatty acids, etc.
Metalloproteins contain a metal ion. Several enzymes contain metallic elements, such as Fe, Co, Mn, Zn, Cu, Mg, etc.

All **enzymes** are simple or complex proteins. According to these six kinds of chemical reactions all enzymes are divided into six classes:
1. *Oxidoreductases* are enzymes that catalyze the oxidation-reduction reactions.
2. *Transferases* are enzymes that catalyze the transfer of different groups of atoms from one substrate to others.
3. *Hydrolases* are enzymes catalyzing the splitting of the intramolecular bonds of organic substances by the use of a water molecule.
4. *Lyases* are enzymes that catalyze splitting of different groups from the substrate not in a hydrolytic way with the formation of the double bond or with joining some groups to the place of the double bond.
5. *Isomerases* are enzymes that catalyze different kinds of reactions of isomerization with the formation of different isomers: that is the substrate of the similar chemical composition and molecular mass but of different molecular structure and qualities.
6. *Ligases* are enzymes catalyzing the synthesis of organic substances from two initial molecules by the use of ATP's or other nucleoside triphosphates.

If genetically different subunits can exist in more than one form, the corresponding enzyme formed from two or several kinds of subunits combined in different proportions will be able to exist in several resembling but not equal forms. These kinds of enzymes were called **isozymes**.

The most studied isozymes are isozymes of lactate dehydrogenase catalyzing the reversible transformation of pyruvate into lactate. Five isozymes of LDH are formed from the subunits of two different kinds, that are conditionally marked as H-kind (from "heart") and M-kind (from "muscle").

Most enzymes are sensitive to inhibition by specific agents that interfere with the binding of a substrate at the active site or with conversion of the enzyme-substrate complex into product.

Inhibition of enzymes can be *reversible* and *irreversible* of an enzyme. If the molecule of inhibitor provokes stable changes or modification of enzyme functional groups, it is an irreversible inhibition. But reversible inhibitors are more common.

The *reversible* inhibition is divided into the *competitive* and *noncompetitive* ones, depending on the fact if the inhibition can overcome by the increase of substrate's concentration. If the increase of concentration doesn't change the degree of inhibition, it is a noncompetitive inhibition. The competitive inhibition is caused by the substances having the same structure as the substrate, but they differ a little from true substrate.

Inhibiting Agents:
a) many enzymes are inhibited by the salts of mercury, silver, gold, and salts of heavy metals or fluorides;
b) oxidases are generally inhibited by cyanides;
c) certain preservatives such as chloroform, glycerol and thymol inhibit some enzymes;
d) toluene has no action on enzymes but is the best preservative for enzyme solution;
e) formaldehyde destroys some enzymes;
the inhibitors present in an enzyme solution occupy the active sites of the enzyme leaving free active sites for substrates to combine.

Exercise 3. Say whether the following statements are true or false.
1.Cellulose, which is a part of the food, isn't digested by enzymes of saliva and small intestine.
2. Digestion of proteins in the stomach lasts for 6-8 hours.
3. Pepsin is produced by cells of intestinal mucosa.

4. Hypovitaminosis of vitamin C causes gout.
5. Organ rich in vitamin B12 is pancreas.
6. Hypovitaminosis of vitamin B12 is pernicious anemia.
7. Toxicity of high doses of folic acid is the same as in other B group vitamins.
8. Hypovitaminosis of vitamin B1 leads to the beri-beri disease.

Exercise 4. Answer the questions.

1.What is a macromolecule?
2. What do complex proteins contain?
3. How are proteins classified?
4. How are amino acids divided according to the chemical structure?
5. What is the division of proteins according to the solubility and functional properties?
6. What are the major subclasses of simple proteins?
7. Name the properties of globulins.
8. What are the properties of gliadins?
9. What proteins form conjugated proteins with DNA and porphyrins?
10. What proteins combine with nucleic acids to form nucleoproteins?
11. What group of simple proteins do keratins, collagen and elastins belong to?
12. What are conjugated proteins?
13. What conjugated protein is abundant in tissues and can be found in thymus and glandular organs?
14. What metallic elements do some enzymes contain?
15. What is enzyme?
16. How are enzymes divided according to their chemical reactions?
17. What are the isozymes?
18. What are the types of inhibition of enzymes?
19. What is the reversible inhibition divided into?
20. Name the inhibiting agents of enzymes.

Exercise 5. Match the terms with their definition.

1.Keratin	a) is the iron-containing oxygen-transport metalloprotein in the red blood cells;
2. Collagen	b) is a phosphoprotein found in milk and egg yolk;
3. Gelatin	c) is a characteristic constituent of epidermal tissue, such as horn, hair, nails, wool, hoofs and feathers;
4. Elastin	d) a specific protein that acts as biological catalysts;
5. Hemoglobin	e) it is not a complete protein as it lacks an amino acid tryptophan and forms a gel on cooling;
6. Casein	f) an be easily converted to gelatin by boiling and splitting off some amino acids;
7. Enzyme	g) it presents in yellow elastic fibre of the connective tissue, ligaments, and tendons. It is formed in large amount in the uterus during pregnancy.

Exercise 6. Write down 5 manifestations to the following medical conditions which can affect people with diabetes. Use symptoms given below; some of them can be used more than once.

Hyperglycemia	Polyphagia	Ketonuria	Nitrogenemia	Nitrogenuria	Polydipsia	Acidosis	Dehydration

Headache; fatigue; weakness;exhaustion; confusion;lack of concentration; sleepiness; trouble sleeping; dizziness; blurry vision; vision disorders; frequent urination; decreased urine output; urine is low volume and more yellowish than normal; urine is foamy, bloody, or coffee-

colored; jaundice; poor appetite; weight loss; swelling around the eyes or in the face, wrists, abdomen, thighs, or ankles; skin darkening in the folds of your neck, armpits, or other areas; chest pain, fast heartbeat or shortness of breath;rapid and shallow breathing; increased heart rate; pale skin; cold hands and feet; soreness of your tongue, brittle nails; dry mouth; dry skin; fruity smelling breath; nausea or vomiting; frequent sores or infections; slow healing of sores; increased thirst/hunger; electrolyte imbalance.

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Тема № 18. **BIOCHEMISTRY. PART II.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються біологічної хімії: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.

Основні поняття: біологічна хімія, авітаміноз, ферменти.

I. План

1. Вивчення медичних термінів з біологічної хімії: їх переклад, особливості словотворення.

2. Аналіз відповідних елементів греко-латинського походження та їх вживання.

3. Переклад, критичний аналіз ситуативних завдань..

II. Практичні завдання, які виконуватимуться

Exercise 1. Read and translate the tests. (Основна [1, с. 109-118])

1. Patient with encephalopathy was admitted to the neurological in-patient department. Correlation of increasing of encephalopathy and substances absorbed by the bloodstream from the intestines was revealed. What substances that are created in the intestines can cause endotoxemia?
A Indole
B Butyrate
C Acetacetate
D Biotin
E Ornithine

2. Examination of a patient suffering from cancer of urinary bladder revealed high rate of serotonin and hydroxyanthranilic acid. It is caused by excess of the following amino acid in the organism:
A Tryptophan
B Alanine
C Histidine
D Methionine
E Tyrosine

3. A 4 y.o. child with signs of durative protein starvation was admitted to the hospital. The signs were as follows: growth inhibition, anemia, edema, mental deficiency. Choose a cause of edema development:
A Reduced synthesis of albumins
B Reduced synthesis of globulins
C Reduced synthesis of hemoglobin
D Reduced synthesis of lipoproteins
E Reduced synthesis of glycoproteins

4. The concentration of albumins in human blood sample is lower than normal. This leads to edema of tissues. What blood function is damaged?
A Maintaining the oncotic blood pressure
B Maintaining the Ph level
C Maintaining the body temperature
D Maintaining the blood sedimentation system
E All answers are correct

5. Ammonia is a very toxic substance, especially for nervous system. What substance takes the most active part in ammonia detoxication in brain tissues?
A Glutamic acid
B Lysine
C Proline
D Histidine
E. Alanine
6. A patient has pellagra. Interrogation revealed that he had lived mostly on maize for a long time and eaten little meat. This disease had been caused by the deficit of the following substance in the maize:
A Tryptophan
B Tyrosine
C Proline
D Alanine
E Histidine
7. A patient with serious damage of muscular tissue was admitted to the traumatological department. What biochemical urine index will be increased in this case?
A Creatinine
B Common lipids
C Glucose
D Mineral salts
E Uric acid
8. Nappies of a newborn have dark spots that witness of formation of homogentisic acid. Metabolic imbalance of which substance is it connected with?
A Thyrosine
B Galactose
C Methionine
D Cholesterine
E Tryptophane
9. A 1,5-year-old child presents with both mental and physical lag, decolorizing of skin and hair, decrease in catecholamine concentration in blood. When a few drops of 5% solution of trichloroacetic iron had been added to the child's urine it turned olive green. Such alterations are typical for the following pathology of the amino acid metabolism:
A Phenylketonuria
B Alkaptonuria
C Tyrosinosis
D Albinism
E Xanthinuria
10. The greater amount of nitrogen is excreted from the organism in the form of urea. Inhibition of urea synthesis and accumulation of ammonia in blood and tissues are induced by the decreased activity of the following liver enzyme:
A Carbamoyl phosphate synthetase
B Aspartate aminotransferase
C Urease
D Amylase
E Pepsin

11. After a serious viral infection a 3-year-old child has repeated vomiting, loss of consciousness, convulsions. Examination revealed hyperammoniemia. What may have caused changes of biochemical blood indices of this child?

A Disorder of ammonia neutralization in ornithinic cycle

B Activated processes of amino acids decarboxylation

C Disorder of biogenic amines neutralization

D Increased putrefaction of proteins in intestines

E Inhibited activity of transamination enzymes

12. Albinos can't stand sun impact - they don't acquire sun-tan but get sunburns. Disturbed metabolism of what amino acid underlies this phenomenon?

A Phenilalanine

B Methionine

C Tryptophan

D Glutamic acid

E Histidine

13. Glutamate decarboxylation results in formation of inhibitory transmitter in CNS. Name it:

A GABA

B Glutathione

C Histamine

D Serotonin

E Asparagine

14. In course of histidine catabolism a biogenic amin is formed that has powerful vasodilating effect. Name it:

A Histamine

B Serotonin

C Dioxyphenylalanine

D Noradrenalin

E Dopamine

15. A patient diagnosed with carcinoid of bowels was admitted to the hospital. Analysis revealed high production of serotonin. It is known that this substance is formed of tryptophaneaminooacid. What biochemical mechanism underlies this process?

A Decarboxylation

B Desamination

C Microsomal oxydation

D Transamination

E Formation of paired compounds

Exercise 2. Find synonyms in the tests to the following words and word combinations.

Avitaminosis, deficiency of the substances, next enzymes, immediate death, cataract, high concentration, physical delay, vertigo, intensified breakdown, quantity of compounds, insufficiency of time, involvement of vitamins, stone formation, attack.

Exercise 3. Translate sentences from Ukrainian into English.

1. Ціанід калію - дуже небезпечна отрута, яка спричиняє миттєву смерть організму людини.
2. Під час тесту на гіперчутливість пацієнтці ввели підшкірну ін'єкцію антигену, що спричинило почервоніння шкіри, набряки, біль внаслідок дії гістаміну.

3. Найбільш вірогідною причиною утворення каміння є посилена концентрація сечової кислоти.
4. З плином часу клітини-мішені пухлини втратили сприйнятливість до цього препарату.
5. Підгузки новонародженого мають темні плями, які свідчать про утворення гомогентизової кислоти.
6. Психічно відсталий хлопчик скаржиться на загальну слабкість, запаморочення, втому.
7. В результаті модифікацій деякі білки, що беруть участь у згортанні крові, стають здатними до зв'язування кальцію.
8. У 10-річної дівчини часто виникають ГРВІ з численними плямистими крововиливами в місцях тертя одягу.
9. Аміак - дуже токсична речовина, особливо для нервової системи.
10. У хворого жовтий колір шкіри, темна сеча, ахроматичний кал.

Exercise 4. Read, translate and discuss a preliminary diagnosis. What analysis you may need to make a correct diagnosis?

The patient is a 10-year-old Maltese boy. On his birthday his aunt gave him a pie made from fava beans (a local delicacy), and that evening he suffered kidney pain, and passed dark urine. A blood film showed a low red blood cell count and the plasma was red colored. This problem is not uncommon in Malta, and indeed several of his classmates (all boys) have died when an acute crisis has been precipitated by eating fava beans, or after a moderate fever associated with an infection.

Further studies showed that his erythrocyte glucose 6-phosphate dehydrogenase was only 10% of normal and had a very high Km for NADP+. Unlike the patient in case 3, his red blood cell enzyme was as stable to incubation at 45°C as that from control subjects.

Exercise 5. Define each of the following abbreviations:

ACTH	
ROS	
MAP	
STP	
IF	
PHC	
HRE	
GPI	
sER	
DAG	
cDNA	
ig	

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Тема № 19. **BIOCHEMISTRY. PART III.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються біологічної хімії та клінічними кейсами: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.

Основні поняття: біологічна хімія, метаболічні розлади та ендокринні захворювання.

І. План

1. Опис біохімічних процесів життєдіяльності в тілі людини та їх розладів англійською мовою.

2. Представлення клінічних кейсів ендокринних та метаболічних захворювань.

ІІ. Практичні завдання, які виконуватимуться

Exercise 1. Read and translate the tests. (Основна [1, с. 124-133])

1. Index of pH of the blood changed and became 7,3 in the patient with diabetes mellitus. Detecting of the components of what buffer system is used while diagnosing disorder of the acidbase equilibrium?
A Bicarbonate
B Phosphate
C Hemoglobin
D Oxyhemoglobin
E Protein
2. Diabetes mellitus causes ketosis as a result of activated oxidation of fatty acids. What disorders of acid-base equilibrium may be caused by excessive accumulation of ketone bodies in blood?
A Metabolic acidosis
B Metabolic alcalosis
C Any changes woun't happen
D Respiratory acidosis
E Respiratory alcalosis
3. Depressions and emotional insanities result from the deficit of noradrenalin, serotonin and other biogenic amines in the brain. Their concentration in the synapses can be increased by means of the antidepressants that inhibit the following enzyme:
A Monoamine oxidase
B Diamine oxidase
C L-amino-acid oxidase
D D-amino-acid oxidase
E Phenylalanine-4-monooxygenase
4. A patient with suspected diagnosis "progressing muscular dystrophy" got his urine tested. What compound will confirm this diagnosis if found in urine?
A Kreatine
B Collagen
C Porphyrin
D Myoglobin
E Calmodulin

5. Dietary intake of a 30 year old nursing woman contains 1000 mg of calcium, 1300 mg of phosphorus and 20 mg of iron per day. It is necessary to change content of these mineral substances in the following way:

A To increase phosphorus content

B To increase calcium content

C To reduce fluorine content

D To increase iron content

E To reduce iron content

6. Cardinal symptoms of primary hyperparathyroidism are osteoporosis and renal lesion along with development of urolithiasis. What substance makes up the basis of these calculi in this disease?

A Calcium phosphate

B Uric acid

C Cystine

D Bilirubin

E Cholesterol

7. Study of conversion of a food colouring agent revealed that neutralization of this xenobiotic takes place only in one phase - microsomal oxydation. Name a component of this phase:

A Cytochrome P-450

B Cytochrome B

C Cytochrome C

D Cytochrome A

E Cytochrome oxidase

8. A patient had hemorrhagic stroke. Blood examination revealed strengthened kinin concentration. The patient was prescribed contrical. It was administered in order to inhibit the following proteinase:

A Kallikrein

B Pepsin

C Trypsin

D Chemotrypsin

E Collagenase

9. Under different pathological states the level of active forms of oxygen rises, which results in the destruction of cellular membranes. In order to prevent the damage of membranes, antioxidants are used. The most powerful natural antioxidant is:

A.a-Tocoferol.

B. Glucose.

C. Vitamin A.

D.Fatty acids.

E. Glycerol.

10. A 4 year old child with hereditary renal lesion has signs of rickets, vitamin D concentration in blood is normal. What is the most probable cause of rickets development?

A Impaired synthesis of calcitriol

B Increased excretion of calcium

C Hyperfunction of parathyroid glands

D Hypofunction of parathyroid glands

E Lack of calcium in food

11. After consumption of rich food a patient has nausea and heartburn, steatorrhea. Thiscondition might be caused by:
A Bile acid deficiency
B Increased lipase secretion
C Disturbed tripsin synthesis
D Amylase deficiency
E Disturbed phospholipase synthesis
12. Fatty of phospholipids is disordered due to fat infiltration of the liver. Indicate which of the presented substances can enhance the process of methylation during phospholipids synthesis?
A Methionine
B Ascorbic acid
C Glucose
D Glycerin
E Citrate
13. Increased amount of free fatty acids is observed in the blood of the patients with diabetes mellitus. It can be caused by:
A Increased activity of triglyceridelipase adipocytes m
B Storage of palmitatoil-CoA
C Activation of the ketone bodies utilization
D Activation of the synthesis of the apolipoproteins
E Decreased activity of phosphatidylcholine-cholesterol-acyltransferase blood plasma
14. A patient with high rate of obesity was advised to use carnitine as a food additive in order to enhance "fat burning". What is the role of carnitine in the process of fat oxidation?
A Transport of FFA (free fatty acids) from cytosol to the mitochondria
B Transport of FFA from fat depots to the tissues
C It takes part in one of reactions of FFA beta-oxidation
D FFA activation
E Activation of intracellular lipolysis
15. An experimantal animal that was kept on protein-free diet developed fatty liver infiltration, in particular as a result of deficiency of methylating agents. This is caused by disturbed generation of the following metabolite:
A Choline
B DOPA
C Cholesterol
D Acetoacetate
E Linoleic acid

Exercise 2. Find the synonyms to the following words from the brackets. More than one is possible. (Основна [1, pp. 124-134])
Assumption –
Additive –
Aversion –
Display –
Enhance –
Healing –
Lesion –

Secretion –
Significant –
Quantity –
(Increase, amount, therapy, sore, excretion, care, suggestion, rejection, number, raise, supplemental, demonstrate, ulcer, treatment, considerable)

Exercise 3. a) Make nouns from given verbs with the help of suffix -ion (-tion).
Absorb, prepare, activate, preserve, constrict, inhibit, denaturate, coagulate, irritate, agglutinate, ovulate, transfuse, indicate, concentrate, obstruct, dilate, inflame, aggravate, associate, digest.
b) Make nouns form given adjectives with the help of suffix -(i)ty.
Able, acid, severe, stable, proper, persist, capable, mortal, morbid, permeable, regular, stable, sensitive, reactive, pure, susceptible, major, soluble, compatible, irreversible.

Exercise 4. Translate the sentences from Ukrainian into English.
1. Аналіз плазми крові виявив різке зниження концентрації міді.
2. Офтальмолог встановив, що у амбулаторного хворого спостерігається збільшення часу адаптації зору до темряви.
3. Клінічні ознаки та лабораторне дослідження пацієнта дозволяють зробити припущення про запалення жовчного міхура.
4. Після прийому збагаченої їжі пацієнт відчуває нудоту і млявість.
5. Цукровий діабет викликає кетоз внаслідок активованого окислення жирних кислот.
6. Основними симптомами первинного гіперпаратиреозу є остеопороз та ураження нирок разом із розвитком сечокам'яної хвороби.
7. Пацієнт 50 років скаржиться на загальну слабкість, зниження апетиту та серцеву аритмію.
8. У пацієнта спостерігається м'язова гіпотонія, мляві паралічі, ослаблена перистальтична активність кишечника.
9. Буферна здатність крові була знижена у працівника через виснажливу м'язову роботу.
10. Концентрація міді різко знижується в плазмі крові і збільшується в сечі.

Exercise 5. Define each of the following abbreviations:

IFN	
CSF	
HDL	
LDL	
MAT	
STAT	
bp	
RIA	
rRNA	
TBP	
PL	
TNF	

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Тема № 20. **MICROBIOLOGY. PART I. PATHOGENS.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються мікробіології: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.

Основні поняття: мікробіологія, патогени.

І. План

1. Вивчення медичних термінів з мікробіології: їх переклад, особливості словотворення та застосування у фахових джерелах інформації і професійному спілкуванні.

2. Аналітичне і пошукове читання.

3. Порівняльний аналіз збудників інфекційних захворювань.

ІІ. Практичні завдання, які виконуватимуться

Exercise 1. Read the text and give answers to the following questions:

1) What kinds of subcellular infectious entities are there?
2) What group of diseases can prions cause?
3) What does the abbreviation *TSE* mean?
4) What are viruses characterized by?
5) How do eukaryotes and prokaryotes differ in their nuclear structure?
6) What is the difference between the cytoplasm of eukaryotes and that of prokaryotes?
7) How do eukaryotes and prokaryotes reproduce?
8) What are the main groups of bacteria?
9) What are *Classic bacteria* characterized by?
10) What are *Chlamydiae* characterized by?
11) What are *Rickettsiae* characterized by?
12) What are *Mycoplasmas* characterized by?
13) Which microorganisms have no photosynthetic pigments and are carbon heterotrophic?
14) What are the morphological features of *Protozoa*?
15) What human pathogens belong to the animal kingdom?
16) Which types of helminthes are medically significant?
17) What does host non-specific defense mechanism include?
18) What are specific immune responses based on?
19) What do *pathogenicity* and *virulence* mean?

PATHOGENS

Infectious diseases are caused by subcellular infectious entities (prions, viruses), prokaryotic bacteria, eukaryotic fungi and protozoans, metazoan animals, such as parasitic worms (helminthes), and some arthropods.

Subcellular Infectious Entities

- ***Prions (proteinaceous infectious particles).*** The evidence indicates that prions are protein molecules that cause degenerative central nervous system (CNS) diseases such as Creutzfeldt-Jakob disease, kuru, scrapie in sheep, and bovine spongiform encephalopathy (BSE) (general term: transmissible spongiform encephalopathies [TSE]).

- ***Viruses.*** Ultramicroscopic, obligate intracellular parasites that: — contain only one type of nucleic acid, either DNA or RNA, — possess no enzymatic energy-producing system and no protein-synthesizing apparatus, and — force infected host cells to synthesize virus particles.

Prokaryotic and Eukaryotic Microorganisms

The world of living things is classified in the three domains: Bacteria, Archaea, and Eukaryota or Eukarya (Archaea were initially classified as bacteria, receiving the name **archaebacteria** (in the Archaebacteria kingdom), but this classification is outmoded). In this system, each domain is subdivided into kingdoms. Pathogenic microorganisms are found in the domains Bacteria and Eucarya.

The table below lists the main differences between prokaryotic (bacteria and archaea) and eukaryotic pathogens.

Characteristic	Prokaryotes (bacteria)	Eukaryotes (fungi, protozoans)
Nuclear structure	Circular DNA molecule not covered with proteins	Complex of DNA and basic proteins
Localization of nuclear structure	Dense tangle of DNA in cytoplasm; no nuclear membrane; nucleoid or nuclear equivalent	In nucleus surrounded by nuclear membrane
DNA	Nucleoid and plasmids	In nucleus and in mitochondria
Cytoplasm	No mitochondria and no endoplasmic reticulum, 70S ribosomes	Mitochondria and endoplasmic reticulum, 80S ribosomes
Cell wall	Usually rigid wall with murein layer; exception: mycoplasmas	Present only in fungi: glucans, mannans, chitin, chitosan, cellulose
Reproduction	Asexual, by binary transverse fission	In most cases sexual, possibly asexual

Bacteria

- ***Classic bacteria***. These organisms reproduce asexually by binary transverse fission. They do not possess the nucleus typical of eucarya. The cell walls of these organisms are rigid (with some exceptions, e.g., the mycoplasma).
- ***Chlamydiae***. These organisms are obligate intracellular parasites that are able to reproduce in certain human cells only and are found in two stages: the infectious, nonreproductive particles called elementary bodies (0.3 lm) and the noninfectious, intracytoplasmic, reproductive forms known as initial (or reticulate) bodies (1 lm).
- ***Rickettsiae***. These organisms are obligate intracellular parasites, rod-shaped to coccoid, that reproduce by binary transverse fission. The diameter of the individual cell is from 0.3–1 lm.
- ***Mycoplasmas.*** Mycoplasmas are bacteria without rigid cell walls. They are found in a wide variety of forms, the most common being the coccoid cell (0.3–0.8 lm). Thread-like forms also occur in various lengths.

Fungi and Protozoa

- ***Fungi.*** Fungi (Mycophyta) are nonmotile eukaryotes with rigid cell walls and a classic cell nucleus. They contain no photosynthetic pigments and are carbon heterotrophic, that is, they utilize various organic nutrient substrates (in contrast to carbon autotrophic plants).

Of more than 50 000 fungal species, only about 300 are known to be human pathogens. Most fungal infections occur as a result of weakened host immune defenses.

- ***Protozoa.*** Protozoa are microorganisms in various sizes and forms that may be free-living or parasitic. They possess a nucleus containing chromosomes and organelles such as mitochondria (lacking in some cases), an endoplasmic reticulum, pseudopods, flagella, cilia, kinetoplasts, etc. Many parasitic protozoa are transmitted by arthropods, whereby multiplication and transformation into the infectious stage take place in the vector

Animals

- ***Helminthes.*** Parasitic worms belong to the animal kingdom. These are metazoan organisms with highly differentiated structures. Medically significant groups include the trematodes (flukes or flatworms), cestodes (tapeworms), and nematodes (roundworms).
- ***Arthropods.*** These animals are characterized by the external chitin skeleton, segmented bodies, jointed legs, special mouthparts, and other specific features. Their role as direct causative agents of diseases is a minor one (mites, for instance, cause scabies) as compared to their role as vectors transmitting viruses, bacteria, protozoa, and helminths.

Host–Pathogen Interactions

The factors determining the genesis, clinical picture and outcome of an infection include complex relationships between the host and invading organisms that differ widely depending on the pathogen involved. Despite this variability, a number of general principles apply to the interactions between the invading pathogen with its aggression factors and the host with its defenses. Since the pathogenesis of bacterial infectious diseases has been researched very thoroughly, the following summary is based on the host–invader interactions seen in this type of infection.

The determinants of ***bacterial pathogenicity and virulence*** can be outlined as follows:

- Adhesion to host cells (***adhesins***).
- Breaching of host anatomical barriers (***invasins***) and colonization of tissues (***aggressins***).
- Strategies to overcome nonspecific defenses, especially antiphagocytic mechanisms (***impedins***).
- Strategies to overcome specific immunity, the most important of which is production of IgA proteases (***impedins***), molecular mimicry, and immunogen variability.
- Damage to host tissues due to direct bacterial cytotoxicity, exotoxins, and exoenzymes (***aggressins***).
- Damage due to inflammatory reactions in the macroorganism: activation of complement and phagocytosis; induction of cytokine production (***modulins***).

The above bacterial pathogenicity factors are confronted by the following host defense mechanisms:

- ***Nonspecific defenses*** including mechanical, humoral, and cellular systems. Phagocytosis is the most important process in this context.
- ***Specific immune responses*** based on antibodies and specific reactions of T lymphocytes.

The response of these defenses to infection thus involves the correlation of a number of different mechanisms. Defective defenses make it easier for an infection to take hold. Primary, innate defects are rare, whereas acquired, secondary immune defects occur frequently, paving the way for infections by microorganisms known as "facultative pathogens" (opportunists).

The terms ***pathogenicity*** and ***virulence*** are not clearly defined in their relevance to microorganisms. They are sometimes even used synonymously. It has been proposed that

pathogenicity be used to characterize a particular species and that virulence be used to describe the sum of the disease-causing properties of a population (strain) of a pathogenic species. Pathogenicity and virulence in the microorganism correspond to ***susceptibility*** in a host species and ***disposition*** in a specific host organism, whereby an individual may be anywhere from highly disposed to resistant.

Exercise 2. Find in the text English equivalents to the following Ukrainian words and word-combinations:

патогенний вид; взаємодія між хазяїном і патогеном; бінарний поперечний поділ; внутрішньоклітинні паразити; грибкові інфекції; плоскі, стрічкові і круглі черви; найпростіші, що передаються членистоногими; проказа і чума; губчастоподібна енцефалопатія великої рогатої худоби (коров'ячий сказ); пріонна інфекція овець; трансмісивна губчаста/спонгіформна енцефалопатія; нестатеве і статеве розмноження; хвороботворні властивості популяції (штаму) патогенного виду, причинно-наслідковий зв'язок між бактеріями і клінічним захворюванням.

Exercise 3. Find misused words and replace them with correct ones (form a word that fits suitably). Explain your choice.

Covid-19 patients who recovery from the disease still have robust immune from the coronavirus eight months after infection, according to a new study. The result is an encouraging sign that the authors interpret to mean immunity to the viral probably lasts for many years, and it should alleviate fearful that the covid-19 vaccine would require repeated booster shots to protective against the disease and final get the pandemic under control.

"There was a lot of concerned originally that this virus might not induce much memory," says Shane Crotty, a research at the La Jolla Institute for Immunology in California and a coauthor of the new paper. "Instead, the immune memory looks quite good."

The study, published January 6 in Science, contrasts with earlier findings that suggestion covid-19 immunity could be short-lived, putting millions who've already recovered at risk of reinfected. That predicament wouldn't have been a totally surprise, since infection by other coronaviruses generates antibodies that fade fairly quick. But the new study suggests reinfection should only be a problem for a very small percentage of people who've development immunity—whether through an initial infection or by vaccination.

In fact, the new study does show that a small number of recovered people do not have long-lasting immunize. But vaccinate ought to offset that problem by ensuring herd immunity in the larger population.

Exercise 4. Use the verbs in brackets in the correct form.

1. Before the first prototype electron microscope (to develop) in 1931 the light microscope (to use) as the only option to investigate cells.
2. Over the past 30 years, numerous studies (to conduct) to explain processes such as membrane traffic and organelle biogenesis.
3. In 1632–1723, Antonie van Leeuwenhoek (to teach) himself to make lenses, (to construct) basic optical microscopes and (to isolate) protozoa from rain water, and bacteria from his own mouth.
4. Despite the patient (to receive) medications for 20 days, his condition didn't improve.
5. Specific immune responses (to base) on antibodies and specific reactions of T lymphocytes.

6. It's only the second time I (to conduct) microscopic evaluation of a gram-stain slide made from those bacterial colonies.
7. If chemotherapy (not to discontinue) last week liver damage would have become too severe.
8. His condition already considerably (to improve) and soon he (to return) to work.
9. The students (to discuss) the effectiveness of vaccine usage in preventing some types of influenza since eight o`clock.
10. The pain (to relieve) by sublingual nitroglycerine before the ambulance arrived.
11. The doctor will prescribe the proper antibiotic as soon as the complete evaluation (to perform).
12. When Koch, who previously (to identify) the tuberculosis bacillus, (to present) his findings to the Cholera Commission in Berlin in 1884, the commission (to congratulate) him, but also (to recognize) Filippo Pacini's previous discovery of the bacterium.

Exercise 5. Make a comparative analysis *between prokaryotic (bacteria and archaea) and eukaryotic pathogens.*

Characteristic	Prokaryotes (bacteria)	Eukaryotes (fungi, protozoans)
Nuclear structure	Circular DNA molecule not covered with proteins	Complex of DNA and basic proteins
Localization of nuclear structure	Dense tangle of DNA in cytoplasm; no nuclear membrane; nucleoid or nuclear equivalent	In nucleus surrounded by nuclear membrane
DNA	Nucleoid and plasmids	In nucleus and in mitochondria
Cytoplasm	No mitochondria and no endoplasmic reticulum, 70S ribosomes	Mitochondria and endoplasmic reticulum, 80S ribosomes
Cell wall	Usually rigid wall with murein layer; exception: mycoplasmas	Present only in fungi: glucans, mannans, chitin, chitosan, cellulose
Reproduction	Asexual, by binary transverse fission	In most cases sexual, possibly asexual

Список рекомендованої літератури

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Електронні інформаційні ресурси

1. Одеський національний медичний університет: https://onmedu.edu.ua/
2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 21. **MICROBIOLOGY. PART II. CHOLERA.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються мікробіології: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження; визначення холери, критичний аналіз її етіології, патогенезу, діагностики, лікування та заходів з запобігання ускладнень англійською мовою.

Основні поняття: мікробіологія, холера.

І. План

1. Вивчення активної лексики за темою.

2. Аналітичне і пошукове читання.

3. Визначення холери, критичний аналіз її етіології, патогенезу, діагностики, лікування та заходів з запобігання ускладнень.

ІІ. Практичні завдання, які виконуватимуться

Exercise 1. Find in the text English equivalents to the following Ukrainian words and word-combinations:

залишатися глобальною загрозою, надзвичайно небезпечне захворювання, вживання зараженої їжі та води, швидка втрата рідини, випорожнення по типу «рисового відвару», зниження тургору шкіри, викликає гіпервентиляцію та дихання Куссмауля, поживне середовище, життєздатна форма, невелике помутніння, експрес-тест, суспензія тонкодисперсних частинок, підвищена секреція хлоридів і натрію, пероральні вакцини проти холери, вбиті цільноклітинні штами.

CHOLERA

Cholera is an acute diarrhoeal infection caused by ingestion of food or water contaminated with the bacterium *Vibrio cholerae*. Cholera remains a global threat to public health and an indicator of inequity and lack of social development.

History. During the 19th century, cholera spread across the world from its original reservoir in the Ganges delta in India. Six subsequent pandemics killed millions of people across all continents.

Symptoms. Cholera is an extremely virulent disease that can cause severe acute watery diarrhoea. It takes between 12 hours and 5 days for a person to show symptoms after ingesting contaminated food or water. Clinical manifestations of cholera can range from asymptomatic to profuse diarrhea. Common symptoms include diarrhea, abdominal discomfort, and vomiting. Severe cholera can be distinguished clinically from other diarrheal illnesses due to the profound and rapid loss of fluid and electrolytes. The stools are often described as having a “rice water” consistency, which can be laced with bile and mucus.

The resulting hypovolemia results in the characteristic manifestations of fluid loss, including dry oral mucosa, cool skin, and decreased skin turgor. Poor perfusion of body tissue can result in lactic acidosis, thereby causing hyperventilation and Kussmaul breathing. In addition, electrolyte

abnormalities such as hypokalemia and hypocalcemia can be responsible for generalized muscle weakness and cramping.

Among people who develop symptoms, the majority have mild or moderate symptoms, while a minority develop acute watery diarrhoea with severe dehydration. This can lead to death if left untreated. Cholera affects both children and adults. With timely treatment (fluid replacement and antibiotics), less than 1% of patients with symptoms die.

Most people infected with *V. cholerae* do not develop any symptoms, although the bacteria are present in their faeces for 1-10 days after infection and are shed back into the environment, potentially infecting other people.

Etiologic agent — *V. cholerae* is a distinctive, comma-shaped gram-negative rod. Organisms are highly motile and possess a single polar flagellum. *V. cholerae* is salt-tolerant, requiring NaCl for growth (halophilic) and exists naturally in aquatic environments. While in aquatic environments, *V. cholerae* may enter a viable but non-culturable form. However, *V. cholerae* is readily grown from clinical specimens, including stool and rectal swabs, and can be identified in microbiology laboratories using selective media and biochemical tests.

Tests. A rapid test to identify Vibrio cholerae in stools has been developed. The test depends on the ability of the vibrios to multiply in a specially designed medium in the presence of other intestinal bacteria and to agglutinate against specific antisera directly. The culture medium consisted of 2 parts: agar and broth. Aseptic condition was not required. A 0.5 ml amount of a diluted stool suspension was added to an equal volume of molten agar in freeze drying glass ampules and left to set while 0.3 ml of broth was allowed to run down the ampule slowly to cover the agar surface. The ampule was incubated at 37 degrees C without shaking for 2 to 4 hours or until a slight turbidity of bacterial growth became visible. A drop of V. cholerae antiserum was then added and left to react at room temperature. In a cholera stool, agglutination appeared as a suspension of fine particles within 1 hour.

Pathophysiology. Ingestion of V. cholerae can lead to colonization of the small intestine. Its flagella allow the organism to swim through mucus and arrive at the intestinal wall. There, toxigenic V. cholerae produces toxin-coregulated pilus that attaches to ganglioside receptors in the mucosal wall. Cholera toxin is produced, which ADP-ribosylates the Gs subunit of the G protein complex in the gut epithelium. This leads to constitutive action of adenylate cyclase, thereby increasing cAMP intracellularly. As a result, increased secretion of chloride, bicarbonate, sodium, and potassium is observed. The secretion of these electrolytes pulls water out of the intestinal cells osmotically, thereby causing diarrhea.

Vibrio cholerae strains. There are many serogroups of V. cholerae, but only two – O1 and O139 – cause outbreaks. V. cholerae O1 has caused all recent outbreaks. V. cholerae O139 – first identified in Bangladesh in 1992 – caused outbreaks in the past, but recently has only been identified in sporadic cases. It has never been identified outside Asia. There is no difference in the illness caused by the two serogroups.

Cholera is readily preventable with the tools available to modern medicine. In developing nations, cholera transmission can be prevented through improved water, sanitation, and hygiene services and the use of oral cholera vaccines (OCVs). There are currently three World Health Organization

pre-qualified OCVs, which are based on killed whole-cell strains of Vibrio cholerae. These established vaccines offer significant protection in adults and children for up to 2 years.

Exercise 2. Read the text and answer the questions:

1. How many pandemics of cholera have been known in history?
2. What is the incubation period of cholera?
3. What are the clinical manifestations of cholera?
4. What does the treatment for cholera include?
5. What are the characteristics of *V. cholerae?*
6. What culture medium is used in a rapid test to identify *V. cholerae* in stools?
7. What is pathophysiology of diarrhoeal symptoms?
8. Which *V. cholera* strains are considered particularly virulent?
9. What does the abbreviation OCVs stand for?

How can cholera be prevented?

Exercise 3. Read Test&Explanation (from STEP 1. US Medical Licensing Examination) and explain the underlined words/word-combinations. Do the tasks given below:

A 61-year-old female is brought to an urgent care clinic by her husband with **altered mental status** for 1 day. She was doing well until yesterday when she started to feel excessively **drowsy**. She had a renal transplant 18 months back. She is compliant with her immunosuppressive medications. On physical examination, her temperature is 39.4°C (103.0°F), blood pressure is 85/50 mm Hg, pulse 135/min and respirations are 24/min. Her **Glasgow Coma Score** is 10/15. There are few black skin lesions on the trunk with a necrotic center forming an eschar. Her laboratory investigation reveals the following:

Hemoglobin	14.2 g/dL
WBC count	3,700/μL
Neutrophils	22%
Lymphocytes	52%
Monocytes	17%
Eosinophils	5%
Basophils	4%
Platelets	179,000/μL
BUN	15 mg/dL
Creatinine	0.8 mg/dL

Blood cultures reveal *Pseudomonas aeruginosa*. Which of the following factors is the most likely responsible for her condition?

(A) Failure of trimethoprim/sulfamethoxazole prophylactic therapy

(B) Failure of immunosuppressive therapy
(C) Decreased interleukin-2 levels
(D) DiGeorge Syndrome
(E) Decreased phagocytic cell count

Explanation:

Correct answer E: The patient presents with **septic shock**, as indicated by her decreased blood pressure, increased temperature, pulse, and respiratory rates, decreased white blood cell counts and presence of *Pseudomonas* bacteremia. It is due to decreased neutrophil count (neutropenia) leading to decreased **phagocytosis** and increased vulnerability to the infections.

Pseudomonas is a gram-negative rod that is aerobic and oxidase positive. It causes severe infection in patients with decreased neutrophil count and in burn patients such as pneumonia and septicemia. The black necrotic skin lesions with erythematous margins are called ecthyma gangrenosum. The drug resistance against *Pseudomonas* is a growing problem and only handful of antibiotics such as aminoglycosides, antipseudomonal penicillins (piperacillin, azlocillin), carbapenems, ciprofloxacin etc. are effective against it.

Task 1. Translate into English:

клініка невідкладної допомоги, відчувати надмірну сонливість, формувати струп **eschar**, зниження кількості лейкоцитів, неефективність імуносупресивної терапії, підвищена вразливість до інфекцій, грамнегативна паличка, опікові хворі, еритематозні краї

Task 2. Say which words/terminological phrases from the Test&Explanation are defined below:

1) **…** - damage to the skin or other body parts caused by extreme heat, flame, contact with heated objects, or chemicals.

2) **…** - the presence of viable bacteria in the bloodstream.

3) **…** - an enzyme that promotes the transfer of a hydrogen atom from a particular substrate to an oxygen molecule, forming water or hydrogen peroxide.

4) **…** - the type of white blood cell (leukocyte) that is characterized histologically by its ability to be stained by neutral dyes and functionally by its role in mediating immune responses against infectious microorganisms.

5) **…** - a common encapsulated, Gram-negative, aerobic–facultatively anaerobic, rod-shaped bacterium that can cause disease in plants and animals, including humans.

Exercise 4. Give the terms their definitions:

1. Pandemic	A)
2. Hypovolemia	B)
3. Hypokalemia	C)
4. Cramping	D)
5. Suspension	E)
6. Broth	F)

7. Pilus G)

8. Outbreak H)

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Електронні інформаційні ресурси

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2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 23. **MICROBIOLOGY. PART III.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються біологічної хімії та клінічними кейсами: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.

Основні поняття: мікробіологія, інфекційні захворювання.

I. План

1. Опис клінічних кейсів інфекційних захворювань.
2. Представлення результатів мікробіологічних досліджень англійською мовою.

II. Практичні завдання, які виконуватимуться

Exercise 1. Read and translate the tests. (Основна [1, с. 176-187])

1. A patient with probable liver abscess was delivered to a surgical department. The patient for a long time had been on an assignment in an African country and had recurrent cases of acute gastrointestinal disturbance. What protozoan disease can it be?
A Amebiasis
B Trypanosomiasis
C Leishmaniasis
D Malaria
E Toxoplasmosis
2. Mass mortality of rodents was observed in one of the mountain villages. Simultaneously there occurred a disease outbreak in the local population. The disease manifested by rapidly progressive fever up to 40°C, marked intoxication, and enlargement of inguinal lymph nodes. Smear preparations made from autopsy specimens contained gram-negative ovoid bacilli with bipolar staining. What microorganism is the causative agent of this disease?
A Yersinia pestis
B Staphylococcus
C Francisella tularensis
D Bacillus anthracis
E Clostridia
3.The disease onset occurred 3 days ago. The patient complains of body temperature up to 38°C, stomachache, and frequent loose bloody stools. Bacillary dysentery was clinically diagnosed in the patient. What method of microbiological diagnostics would be advisable in this case and what samples should be obtained from the patient to confirm this diagnosis?
A Bacteriology, feces
B Bacterioscopy, feces
C Bacterioscopy, blood
D Bacteriology, urine
E Serology, blood
4.vPatients with similar complaints applied to the doctor: weakness, pain in the intestines, GIT disorder. Examination of the faeces revealed that one patient with four nucleus cysts should be hospitalized immediately. What protozoa are such cysts typical for?
A Dysenteric amoeba
B Intestinal amoeba
C Balantidium
D Trichomonas
E Lamblia

5. A female patient consulted a physician about digestive disorder, extended abdominal pain. Examination revealed drastic decrease in hemoglobin concentration. It is known from the anamnesis that while living in the Far East the patient used to eat freshly-salted caviar. Some relatives living with her had the similar condition. What is the most likely diagnosis?
A Diphyllobothriasis
B Echinococcosis
C Teniasis
D Trichiniasis
E Ascaridiasis
6. Serological diagnostics of infectious diseases is based upon specific interaction with antigenes. Specify the serological reaction that underlies adhesion of microorganisms when they are affected by specific antibodies in presence of an electrolyte:
A Agglutination reaction
B Precipitation reaction
C Complement-binding reaction
D Hemadsorption reaction
E Neutralization reaction
7. In order to determine toxigenicity of diphtheria bacilli a strip of filter paper impregnated with antitoxic diphtherial serum was put on the dense nutrient medium. There were also inoculated a microbial culture under examination and a strain that is known to be toxigenic. If the microbial culture under examination produces exotoxin, this will result in formation of:
A Precipitin lines
B Haemolysis zones
C Zones of diffuse opacification
D Zones of lecithovitellinous activity
E Precipitin ring
8. Examination of patients with periodontitis revealed the interdependence between the rate of affection of periodontal tissues and the amount of lysozymes in saliva and gingival liquid. These results can be obtained during studying the following protection system of an organism:
A Non-specific resistance
B Humoral immunity
C Cellular immunity
D Autoresponsiveness
E Tolerance
9. A patient complains of skin itch, especially between fingers, in the inguinal creases, on the lower abdomen. Examination of these regions revealed there some small vesicles. Laboratory diagnostics allowed to establish that this condition had been caused by a representative of Arthropoda. Specify the disease caused by this arthropod:
A Scabies
B Demodicosis
C Myiasis
D Pediculosis
E Dermatotropic leishmaniasis
10. A 71 year old man had been presenting with diarrhea for 10 days. The feces had admixtures of blood and mucus. He was delivered to a hospital in grave condition and died 2 days later. Autopsy of the body revealed the following: diphtheritic colitis with multiple irregularly-shaped ulcers of different depth in both sigmoid colon and rectus. Bacteriological analysis revealed Shigella. What was the main disease?
A Dysentery
B Typhoid fever
C Salmonellosis
D Nonspecific ulcerous colitis

E Yersiniosis

11. Examination of duodenal contents revealed some pyriform protozoa with twin nuclei and four pairs of flagella. There were two supporting filaments between the nuclei and a suctorial disc on the ventral side. What representative of protozoa was revealed in this patient?

A Lamblia
B Toxoplasma
C Leishmania
DIntestinal trichomonad
E Trypanosome

12. Vomiting matters of a patient suspected of having cholera were delivered to the bacteriological laboratory. The material was used for preparing a "hanging drop" specimen. What type of microscopy will be applied for identification of the causative agent by its motility?

A Phase-contrast microscopy
B Electron microscopy
C Immune and electron microscopy
D Fluorescence microscopy
E Immersion microscopy

13. A 4 year old child presents with general weakness, sore throat and deglutitive problem. After his examination a doctor suspected diphtheria and sent the material to the bacteriological laboratory. In order to determine the diphtheria causative agent the material should be inoculated into the following differential diagnostic medium:

A Blood tellurite agar
B Endo's agar
C Ploskyrev's agar
D Sabouraud's agar
E Levenshtein-Yessen agar

14. During regular examination of schoolchildren it was revealed that a 10 year old girl had asymmetric oval eggs with a larva in the scrape from her perianal folds. What diagnosis should be made?

A Enterobiasis
B Ascariasis
C Amebiasis
D Trichocephalosis
E Ankylostomiasis

15. Researchers of a bacteriological laboratory examine tinned meat for botulinic toxin. For this purpose a group of mice was injected with an extract of the material under examination and antitoxic antibotulinic serum of A, B, E types. A control group of mice was injected with the same extract but without antibotulinic serum. What serological reaction was applied?

A Neutralization
B Precipitation
C Complement binding
D Opsonocytophagic
E Double immune diffusion

16. During the repeated Widal's agglutination test it was noticed that the ratio of antibody titers and O-antigens S.typhi in the patient's serum had increased from 1:100 to 1:400. How would you interpret these results?

A The patient has typhoid fever
B The patient is an acute carrier of typhoid microbes
C The patient is a chronic carrier of typhoid microbes
D The patient previously had typhoid fever
E The patient was previously vaccinated against typhoid fever

Exercise 2. Complete each sentence with the correct ending from box B

A	B
1) Mycobacteria are slender rod bacteria that are stained …	1) … remain clinically silent.
2) Ninety percent of primary infection foci …	2) … on the skin, mucosa, and peripheral nerves
3) Humans show a considerable degree …	3) … atypical mycobacteria (old designation), nontuberculous mycobacteria (NTM) or MOTT (mycobacteria other than tubercle bacilli).
4) Diagnosis requires microscopic and cultural identification …	4) … with special differential stains (Ziehl-Neelsen).
5) Leprosy is manifested mainly …	5) … of genetically determined resistance to TB.
6) Mycobacteria that are neither tuberculosis nor leprosy bacteria are categorized as …	6) … a purulent conjunctivitis, seen mainly in newborn children.
7) Gonococci are Gram-negative, coffee-bean-shaped cocci …	7) of the pathogen or pathogen-specific DNA.
8) Gonococci reaching the conjunctival membrane may cause …	8) … by smear infection or indirect via food and drinking water.
9) Species with many flagella (e.g., Proteus species) show motility …	9) that are usually paired and have a diameter of approximately 1 lm.
10) Transmission is either direct …	10) … on the agar surface.

Exercise 3. Fill in the gaps with correct Plural/Singular forms.

Singular	Plural
	bacteria
bacillus	
(culture) medium	
alga	
	species
spirillum	
nucleus	
	cocci
	chlamydiae
analysis	
	rickettsiae
focus	
flagellum	
	fungi
	cilia
mitochondrion	
clostridium	

Exercise 4. Match the words with the similar meaning.

specimen	analysis
curved	swallowing
assay	bacilliform
impregnate	sample
motility	identify

rod-shaped	egg-shaped
filament	bent
specify	soak
ovoid	crease
fold	fiber
deglutition	mobility

Exercise 5. Read the text below. Use the word given in brackets to form a word that fits in the gap.

Specific Immune Defenses

The specific, adaptive … (immunity) defenses include both the humoral system (antibody-… (produce) B cells) and the cellular system (T helper cells and … (cytotoxicity) T lymphocytes). In general, viruses the antigens of which are expressed on the surface of the … (infection) cells tend to induce a cellular immune response and viruses that do not change the … (antigen) of their host cells tend to …(activation) the humoral system.

Humoral immunity. Antibodies can only attack viruses outside of their host cells, which means that once an infection is … (establishment) within an organ it can hardly be further influenced by antibodies, since the viruses spread … (direct) from cell to cell. In principle, the humoral immune system is thus only capable of … (prevent) a … (general) infection, but only if the antibodies are … (presence) at an early stage (e.g., induced by … (vaccinate). Class IgG and IgM antibodies are active in the bloodstream and class IgA is active on the mucosal surface. The … (effectiveness) of the antibodies on the viral particles ("neutralization") is based on steric hindrance of virus adsorption to the host cells by the antibodies … (attachment) to their surfaces. The … (neutralize) effect of antibodies is strongest when they react with the receptor-binding sites on the capsids so as to block them, rendering the virus … (incapability) of combining with the cellular receptors.

Cellular immunity. This type of immune … (defend) is far more important when it comes to fighting viral infections. T lymphocytes (killer cells) recognize virus- … (infectious) cells by the viral antigens on their surfaces and … (destruction) them. The … (observe) that patients with defective humoral … (immune) generally fare better with virus infections than those with a defective cellular … (responsibility) underlines the fact that the cellular immune defense system is the more … (importance) of the two.

Exercise 6. Fill in the table

NOUN	ADJECTIVE	VERB
curve	curved	
	inoculative	
cause		
infestation		
		deepen
		recur
	impregnated	
specification		
		immunize

Exercise 7. Say which words/terminological phrases are defined below.

1) ... - piece of dead tissue that is cast off from the surface of the skin, particularly after a burn injury, but also seen in gangrene, ulcer, fungal infections, necrotizing spider bite wounds, tick bites associated with spotted fevers, and exposure to cutaneous anthrax.

2) ... - a lack or shortage; a condition characterized by the presence of less than the normal or necessary supply or competence.

3) ... - the immune response of the recipient to foreign tissue cells (antigens) after homograft transplantation, with the production of antibodies and ultimate destruction of the transplanted organ.

4) ... - potentially life-threatening invasion of the bloodstream by pathogenic agents and especially bacteria along with their toxins from a localized infection (as of the lungs or skin) that is accompanied by acute systemic illness.

5) ... - a subset of sepsis in which particularly profound circulatory, cellular, and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone.

6) ... - damage to the skin or other body parts caused by extreme heat, flame, contact with heated objects, or chemicals.

7) ... - the ability of bacteria and other microorganisms to withstand a drug that once stalled them or killed them.

8) ... - a practical method used to describe the level of consciousness in a person following a traumatic brain injury.

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1. Одеський національний медичний університет: https://onmedu.edu.ua/
2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 23. **MICROBIOLOGY. PART IV.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються біологічної хімії та клінічними кейсами: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.

Основні поняття: мікробіологія, інфекційні захворювання.

I. План

1. Опис клінічних кейсів інфекційних захворювань.
2. Представлення результатів мікробіологічних досліджень англійською мовою.

II. Практичні завдання, які виконуватимуться

Exercise 1. Read and translate the tests. (Основна [1, с. 194-205])

1. A patient of surgical department complains of pain in the small of her back and in the lower part of her belly; painful and frequent urination. Bacteriological examination of urine revealed gram-negative oxidase-positive rod-shaped bacteria forming greenish mucoid colonies with specific smell. What causative agent can it be?
A Pseudomonas aeruginosa
B Proteus mirabilis
C E.coli
D Str.pyogenes
E Mycoplasma pneumonie
2. A gynaecologist was examining a patient and revealed symptoms of genital tract inflammation. A smear from vagina contains pyriform protozoa with a spine, flagella at their front; there is also an undulating membrane. What disease can be suspected?
A Urogenital trichomoniasis
B Lambliasis
C Intestinal trichomoniasis
D Toxoplasmosis
E Balantidiasis
3. Inoculum from pharynx of a patient ill with angina was inoculated into blood-tellurite agar. It resulted in growth of grey, radially striated (in form of rosettes) colonies 4-5 mm in diameter. Grampositive bacilli with clublike thickenings on their ends placed in form of spread wide apart fingers are visible by microscope. What microorganisms are there?
A Diphtheria corynebacteria
B Botulism clostridia
C Diphtheroids
D Streptococci
E Streptobacilli
4. Analysis of the cerebrospinal fluid of a child with signs of purulent lesion of brain tunics revealed gram-negative bean-shaped diplococci. What presumptive diagnosis can be made on the basis of the analysis results?
A Meningitis
B Gonorrhea
C Cholera
D Plague
E Anthrax

5. It is necessary to carry out preventive vaccination of a student group because of an occurrence of diphtheria. Which preparation should be used for the creation of the artificial active immunity?
A DTP vaccine
B Specific immunoglobulin
C Diphtheria toxoid
D Inactivated bacteria vaccine
E Anti-diphtheria serum
6. From the nasopharynx of a 5-year-old child it was excreted a microorganism which is identical to Corynebacterium diphtheriae according to morphological and biochemical signs. Microorganism does not produce exotoxin. As a result of what process can this microorganism become toxigenic?
A Phage conversion
B Cultivation in the telluric environment
C Passing through the organism of the sensitive animals
D Growing with antitoxic serum
E Chromosome mutation
7. The organisms to be identified have a nucleus surrounded by a nuclear membrane. Genetic material is concentrated predominantly in the chromosomes which consist of DNA strands and protein molecules. These cells divide mitotically. Identify these organisms:
A Eukaryotes
B Bacteriophages
C Prokaryotes
D Viruses
E Bacteria
8. A child is presumably ill with diphtheria. A specimen of affected mucous membrane of his pharynx was taken for analysis. The smear was stained and microscopic examination revealed yellow rods with dark blue thickenings on their ends. What structural element of a germ cell was revealed in the detected microorganisms?
A Volutin granules
B Plasmids
C Capsule
D Spores
E Flagella
9. There are several cases of children from boarding school suffering from sore throat. Microscopy of tonsil smears stained according to Neisser method has revealed thin yellow bacilli with dark brown grains on their ends placed in the shape of Roman numeral five. What infection can be suspected in this case?
A Diphtheria
B Infectious mononucleosis
C Listeriosis
D Tonsillitis
E Scarlet fever
10. A patient has a suspected pneumonia. In his sputum there were revealed gram-positive diplococci, prolonged with the slightly pointed opposite ends. What microorganisms are revealed in the sputum?
A Streptococcus pneumonia
B Neisseria gonorrhoeae
C Neisseria meningitidis
D Klebsiella pneumonia
E Staphylococcus aureus

11. Gram-negative bean-shaped diplococcus inside and outside of leucocytes were detected on bacteriological examination of the purulent exudates from the cervix of the uterus. Name the causative agent of purulent inflammation of the cervix of the uterus.
A Neisseria gonorrhoeae
B Chlamidia trachomatis
C Calymmatobacterium granulomatis
D Haemophilus vaginalis
E Trichomonas vaginalis
12. While studying blood and mucus samples from the nasopharynx, a bacteriologist took certain measures to preserve the pathogens in the material. Bacterioscopic study revealed the presence of gram-negative cocci looking like coffee beans and arranged in pairs or tetrads. Name the pathogen that was isolated by the bacteriologist:
A Neisseria meningitidis
B Staphilococcus aureus
C Neisseria gonorrhoeae
D Moraxella lacunata
E Acinetobacter calcoaceticus
13. A 34 year old male patient consulted a doctor about face carbuncle. Objectively: a loose, painless edema of hypodermic tissue; black crust in the center of carbuncle, vesicular rash around it. Microbiological examination revealed static streptobacilli capable of capsule building. What microorganisms are the causative agents of this disease?
A Bacillus anthracis
B Staptylococcus aureus
C Bacillus subtilis
D Bacillus anthracoideus
E Bacillus megaterius
14. A patient complained of a carbuncle on his face. Examination results: neither dense nor painful edema of subcutaneous cellular tissue, there is black crust in the middle of the carbuncle and peripheral vesicular rash around it. Bacteriological examination revealed presence of immobile streptobacilli capable of capsulation. What microorganisms are causative agents of this disease?
A Bacillus anthracis
B Staptylococcus aureus
C Bacillus anthracoideus
D Bacillus megaterius
E Bacillus subtilis
15. A man died from an acute infectious disease accompanied by fever, jaundice, haemorrhagic rash on the skin and mucous membranes as well as by acute renal insufficiency. Histological examination of renal tissue (stained by Romanovsky-Giemsa method) revealed some convoluted bacteria looking like C and S letters. What bacteria were revealed?
A Leptospira
B Treponema
C Spirilla
D Borrelia
E Campilobacteria
16. The laboratory for especially dangerous infections conducts microscopic examination of pathological material from a patient with suspected plague. The sample was stained by Burri-Gins technique. What property of the causative agent can be identified by this technique?
A Capsule formation
B Spore formation
C Acid resistance
D Alkali resistance
E Presence of volutin granules

17. Microscopy of dental plaque revealed unicellular organisms. Their cytoplasm had two distinct layers, barely visible core, wide pseudopodia. The patient is most likely to have:
A Entamoeba gingivalis
B Entamoeba histolytica
C Trichomonas tenax
D Lamblia
E Entamoeba coli
18. A puncture sample taken from the lymph node of a patient with preliminary diagnosis of protozoan disease has been investigated. The preparation was processed with Giems stain technique and the following was detected: crescent-shaped bodies with pointed tips, blue cytoplasm and red nuclei. What protozoa have been detected in the preparation?
A Toxoplasma
B Plasmodium malariae
C Trypanosoma
D Viscerotropic Leishmania
E Dermatotropic Leishmania
19. A three-year-old child has had marked diarrhea for three days. Immune electron microscopy of his excrements revealed bilayer pseudocovered capsid viruses that looked like small spoke wheels. What viruses have been revealed?
A Rotaviruses
B Coxsackie viruses
C ECHO viruses
D Coronaviruses
E Reoviruses
20. A 32-year-old patient who lives in the countryside consulted a doctor about a painful swelling and a fistula in the submandibular region. Examination revealed an infiltration with a fistula discharging thick pus and containing white granules. On dissection the infiltration tissues turned out to be dense, yellow-green and had honeycomb structure because of multiple abscesses. What is the most likely diagnosis?
A Actinomycosis
B Tuberculosis
C Lepra
D Syphilis
E Submandibular abscess

Exercise 2. Translate the word-combinations into Ukrainian.

Microscopic examination of scrapings, living porrect vermiform arthropoda, fusiform spore forming microorganisms, a large focus of caseous necrosis, elongated chains of dark-violet gemmating cells, moistened with antidiphtheric antitoxic serum, inoculated into sugar broth, a smear from the sediment, the strip-like areas of medium turbidity, old burial ground for animal refuse, the causative agent of tick-borne encephalitis, an undulating membrane, grampositive bacilli with clublike thickenings on their ends, a prolonged period of dormancy, blue bacilli with a thickening at the poles, crescent-shaped bodies with pointed tips, gram-negative bean-shaped diplococcus, mobile convoluted microorganisms, marked nuchal rigidity, halfmoon-shaped unicellular organisms with pointed ends.

Exercise 3. Give the synonyms to the terms and expressions below (you may use the words in brackets below)

hospital-acquired infection (HAI)

asymptomatic infections

trematodes

nematodes

cestodes
patients with weakened immune system
debilitated patients
direct contact infection
epidemic parotitis
Hansen's disease (HD)
pertussis
(immune-compromised patients, whooping cough, roundworms, weakened patients, leprosy, nosocomial infection, subclinical infection, flatworms, smear infection, tapeworms, mumps)

Exercise 4. Match the words with the similar meaning.

vermiform	halfmoon-shaped
sediment	wavy
porrect	cloudiness
rigidity	worm-like
undulating	precipitate
turbidity	curettage
crescent-shaped	resembling
predominantly	extended forwards
scraping	mostly
similar	stiffness

Exercise 5.

a) Make nouns from adjectives.

Drowsy, urgent, vulnerable, compliant, immunosuppressive, likely, effective, severe, responsible.

b) Make verbs from nouns and adjectives.

Threat**,** local, strength, worse, weak, trauma, metabolism, vaccine, neutral, red.

c) Make nouns from verbs.

Describe, alter, prevent, invade, injure, expose, incise, reject, manage, perceive.

Exercise 6. Fill in the table

NOUN	ADJECTIVE
	elongated
suppuration	
rigidity	
cause	
culture	
	immobile
	capable
	severe

Exercise 7. Write the sentences in the Passive.

1) In 1890 the German physician and bacteriologist Robert Koch formulated four criteria for establishing a causative relationship between a microbe and a disease.

2) In active immunization, administration of vaccines stimulates the immune system to develop a disease-specific immunity.

3) The term asepsis covers all measures aiming to prevent contamination of objects or wounds.

4) The temperature coefficient describes the influence of temperature on the effectiveness of chemical agents.

5) Laboratory analysis detected oval eggs covered with lumpy capsules in the patient's feces.

6) Manufactures should use Ascoli's thermo precipitation test to examine the raw leather for presence of B. anthracis.

7) What protozoan disease could cause intrauterine death?

8) Immunological processes can also influence the course of viral infections.

Exercise 8. Fill in the gaps with the words given in the box.

Arthropods, defenses, eukaryotes, mitochondria, parasitic, photosynthetic pigments, species, transformation

Fungi and Protozoa

Fungi. Fungi (Mycophyta) are nonmotile … with rigid cell walls and a classic cell nucleus. They contain no … and are carbon heterotrophic, that is, they utilize various organic nutrient substrates (in contrast to carbon autotrophic plants). Of more than 50 000 fungal …, only about 300 are known to be human pathogens. Most fungal infections occur as a result of weakened host immune … .

Protozoa. Protozoa are microorganisms in various sizes and forms that may be free-living or …. They possess a nucleus containing chromosomes and organelles such as … (lacking in some cases), an endoplasmic reticulum, pseudopods, flagella, cilia, kinetoplasts, etc. Many parasitic protozoa are transmitted by …, whereby multiplication and … into the infectious stage take place in the vector.

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2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 24. **PHARMACOLOGY. PART I. NEUROTRANSMITTERS**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються фармакології: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження; особливості функціонування нейротрансмітерів та їх застосування у лікуванні.

Основні поняття: фармакологія, нейротрансмітери.

I. План

1 Вивчення активної лексики за темою.
2. Аналітичне і пошукове читання.
3. Порівняльний аналіз фармакокінетики різних видів препаратів на основі речовин-нейромедіаторів.

II. Практичні завдання, які виконуватимуться

Exercise 1. Read the text:

Neurotransmitters. Each neuron is a distinct anatomic unit. Communication between nerve cells – and between nerve cells and effector organs – occurs through the release of specific chemical signals, called neurotransmitters, from the nerve terminals. This release depends on processes that are triggered by Ca^{++} uptake and regulated by phosphorylation of synaptic proteins. The neurotransmitters rapidly diffuse across the synaptic cleft or gap (synapse) between nerve endings and combine with specific receptor on the postsynaptic (target) cell.

Types of neurotransmitters. Although over 50 chemical signal molecules in the nervous system have tentatively been identified, 6 signal compounds–norepinephrine (and closely related epinephrine), acetylcholine, dopamine, serotonin, histamine, and γ-amino butyric acid–are most commonly involved in the actions of therapeutically useful drugs. Each of these chemical signals binds to a specific family of receptors. Cholinergic and adrenergic neurotransmitters are the primary chemical signals in the autonomic nervous system, whereas a wide variety of neurotransmitters function in the CNS.

Acetylcholine. The autonomic nerve fibers can be classified into two groups based on the chemical nature of the neurotransmitter released. If transmission is mediated by acetylcholine, the neuron is termed **cholinergic**. Acetylcholine mediates the transmission of nerve impulses across autonomic ganglia in both the sympathetic and parasympathetic nervous systems. It is the neurotransmitter at the adrenal medulla.

Transmission from the autonomic postganglionic nerves to the effector organs in the parasympathetic system also involves the release of acetylcholine.

Noradrenaline and Adrenaline. *Adrenaline* is one of five catecholamines – *Adrenaline, Noradrenaline, Dopamine, Dobutamine,* and *Isoproterenol* – commonly used in therapy. The first three catecholamines occur naturally, the latter two are synthetic compounds. *Adrenaline* is synthesized in the adrenal medulla and released into the blood stream. *Adrenaline* interacts with both α and β receptors. At low doses, β effects (vasodilatation) on the vascular system predominate, whereas at high doses, α effects (vasoconstriction) are strongest.

Actions:

a. **Cardiovascular:** the major actions of *adrenaline* are on the cardiovascular system. *Adrenaline* strengthens the contractility of the myocardium (positive inotropic: β_1 action) and increases its rate of contraction (positive chronotropic: β_1 action). Cardiac output therefore increases. With these effects come increased oxygen demands on the myocardium. *Adrenaline* constricts arterioles in the skin, mucous membranes, and viscera (α effects) and dilates vessels going to the liver and skeletal muscle (β_2 effects). Renal blood flow is decreased. The cumulative effect, therefore, is an increase in systolic blood pressure, coupled with a slight decrease in diastolic pressure.
b. **Respiratory:** *Adrenaline* causes powerful bronchodilation by acting directly on bronchial smooth muscle (β_2 action). This action relieves all known allergic- or histamine-induced bronchoconstriction. In the case of anaphylactic shock, this can be life-saving.
c. **Hyperglycemia:** *Adrenaline* has a significant hyperglycemic effect because of increased glycogenolysis in liver (β_2 effect), increased release of glucagon (β_2 effect), and a decreased release of insulin (α_2 effect).
d. **Lipolysis:** *Adrenaline* initiates lipolysis through its agonist activity on the β receptors of adipose tissue, which activate a hormone-sensitive lipase, which hydrolyzes triacylglycerols to free fatty acids and glycerol.

Therapeutic uses:

a. **Bronchospasm:** *Adrenaline* is the primary drug used in the emergency treatment or any condition of the respiratory tract where the presence of bronchoconstriction has resulted in diminished respiratory exchange. Thus, in the treatment of acute asthma and anaphylactic shock, A*drenaline* is the drug of choice; within a few minutes after subcutaneous administration, greatly improved respiratory exchange is observed. Administration may be repeated after a few hours. However, selective β_2 agonists, such as *Terbutaline*, are presently favored in the chronic treatment of asthma because of a longer duration of action and minimal cardiac stimulatory effect.
b. **Glaucoma:** In ophthalmology, a 2 % A*drenaline* solution may be used topically to reduce intraocular pressure in open-angle glaucoma. It reduces the production of aqueous humor by vasoconstriction of the ciliary's body blood vessels.
c. **Anaphylactic shock:** *Adrenaline* is the drug of choice for the treatment of Type I hypersensitivity reactions in response to allergens.
d. **In anesthetics:** Local anesthetic solutions usually contain 1:100,000 parts *Adrenaline*. The effect of the drug is to greatly increase the duration of the local anesthesia. It does this by producing vasoconstriction at the site of injection, thereby allowing the local anesthetic to persist at the site before being absorbed into the circulation and metabolized. Very weak solutions of *Adrenaline* (1:100,000) can also be used topically to vasoconstriction mucous membranes to control oozing of capillary blood.

Pharmacokinetics. *Adrenaline* has a rapid onset but brief duration of action. In emergency situation *Adrenaline* is given intravenously for the most rapid onset of action; it may also be given subcutaneously, by endotracheal tube, by inhalation, or topically to the eye. Oral administration is ineffective.

Adverse effects. *Adrenaline* can produce adverse CNS effects that include anxiety, fear, tension, headache, and tremor. The drug may induce cerebral hemorrhage as a result of a marked elevation of blood pressure. *Adrenaline* can trigger cardiac arrhythmias, particularly if the patient is

receiving *digitalis*. *Adrenaline* can induce pulmonary edema in predisposing patients with left ventricular failure.

Noradrenaline

Since *Noradrenaline* is the neuromediator of adrenergic nerves, it should theoretically stimulate all types of adrenergic receptors. In practice, when the drug is given in therapeutic doses, the α receptors are most affected.

Cardiovascular actions:

a. **Vasoconstriction:** *Noradrenaline* causes a rise in peripheral resistance due to intense vasoconstriction of most vascular beds, including the kidney (an α_1-receptor effect). Both systolic and diastolic blood pressure increase.
b. **Baroreceptor reflex:** In isolated cardiac tissue *Noradrenaline* stimulates cardiac contractility; however, in vivo, little if any cardiac stimulation is noted. This is due to the increased blood pressure that induces the reflex rise in vagal activity by stimulating the baroreceptors. This bradycardia is sufficient to counteract the local action of *Noradrenaline* on the heart.

If *atropine* (which blocks the transmission of vagal effects) is given before *Noradrenaline,* then *Noradrenaline* stimulation of the heart is evident as tachycardia.

Therapeutic uses. *Noradrenaline* is used to treat shock because it increases vascular resistance and, therefore, increases blood pressure; however, *Dopamine* is better, because it does not reduce blood flow to the kidney as does *Noradrenaline*. Other actions of *Noradrenaline* are not considered clinically significant. It is never used for asthma.

Exercise 2. Answer the questions to the text:

1. What is a neurotransmitter?
2. Which neurotransmitters are most commonly involved in the actions of therapeutically useful drugs?
3. What does acetylcholine mediate?
4. What kind of neurotransmission is called cholinergic?
5. What catecholamines are commonly used in therapy?
6. Which catecholamines occur naturally and which are synthetic compounds?
7. How does Adrenaline act on the cardiovascular system?
8. How does Adrenaline affect the respiratory system?
9. What are the main therapeutic actions of Adrenaline?
10. What kind of administration is ineffective for Adrenaline?
11. What adverse effects can Adrenaline produce?
12. What are the cardiovascular actions of Noradrenaline?
13. What happens if atropine is given before Noradrenaline?
14. What are the therapeutic uses of Noradrenaline?
15. Why is Dopamine better to treat shock than Noradrenaline?

Exercise 3. Say whether the following statements are true or false according to the text:

1. Transmission from the autonomic postganglionic nerves to the effector organs in the parasympathetic system also involves the release of adrenaline.
2. Adrenaline has the strongest effect on the cardiovascular system.

3. The action of noradrenaline can be life-saving in case of anaphylactic shock.
4. Adrenaline significantly increases glycogenolysis in the liver.
5. Adrenaline is the drug of choice for managing anaphylactic shock.
6. The duration of local anesthetics effect is greatly increased due to adrenaline.
7. Oral administration of adrenaline is the most effective.
8. Noradrenaline is used to treat shock because it increases vascular resistance and, therefore, decreases blood pressure.

Exercise 4. Find the Ukrainian equivalents of the following word combinations in the text:

synaptic cleft		in vivo	
To mediate the transmission		vagal activity	
Transmission to the effector organs		the drug of choice	
To occur naturally		to persist at the site	
To strengthen the contractility of the myocardium		to counteract the local action	
To increase cardiac output		To be considered clinically significant	
allergic- or histamine-induced bronchoconstriction		To be presently favored	

Exercise 5. Read the text and follow the next instructions:

Mercury poisoning

a) Fill the gaps with the words from the table:

bloody diarrhea; harmful levels of mercury; mercuric chloride; mercury vapours, fumes, and dusts; the digestive tract; the mode of contact; the kidneys; toxic substances.

Mercury is used on a substantial scale in numerous industries, such as the manufacture of chemicals, paints and various household items, pesticides, and fungicides. In addition to the danger from many consumer goods that contain potentially 1._____, the air may be contaminated by 2._____ and the waters by effluent wastes containing mercury in various forms. Depending on the type of mercury compound and 3._____, the symptoms of intoxication in man vary.

Acute mercury poisoning usually results from the accidental or suicidal ingestion of soluble mercury salts, such as 4._____. The effect is severe inflammation of 5._____. Abdominal cramps with nausea and vomiting and 6._____ commonly occur within hours. The absorbed mercury is concentrated in 7._____, where it poisons the blood-filtering structures; as a result, there is first a decrease and then complete cessation of urine output, causing the accumulation of 8._____ in the blood (uremia) and death.

b) **Fill in appropriate prepositions:**

Chronic mercury poisoning may result 1._____ the occupational inhalation of mercury vapours, dusts, or volatile organic mercurials or from the absorption 2._____ the skin of various mercury salts (such as mercuric nitrate, used in making felt for hats). Symptoms may include a metallic taste and excessive production of saliva; inflammation of the membranes of the mouth; loosening of the teeth; the formation of a blue line 3.____ the gums; pain, numbness, and tremor 4.____ the extremities; loss of weight and appetite; and mental and personality changes marked 5. depression and a tendency to withdraw.

Poisoning 6.___ organic mercurial compounds is characterized by lesions 7.___ the central nervous system. This form of mercury poisoning became known 8.__ Minamata disease because 9.____ a dramatic outbreak that occurred in Minamata, Japan, 10.__ the early 1950s. There was progressive weakening of the muscles, loss of vision, impairment 11.____ the cerebral functions, eventual paralysis, and, in some cases, coma and death. Minamata seabirds and household cats, which, like the fishermen and their families, subsisted mainly 12.____ fish, showed signs of the same disease. This led __13.___ the discovery of high concentrations of methyl mercurials in fish and shellfish taken 14._____ the bay. The source of mercury was traced to the effluent from a factory. Other outbreaks of this disease involving large numbers of persons have taken place where farmers who received grain seeds treated 15.____ an organic mercury compound ate the seeds instead of planting them.

Exercise 6. Write in words:

IV (i.v.)	
IM (i.m.)	
Las	
HDL	
GI	
CSF	
REM	
SC (s.c.)	
AC	
BBB	

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Електронні інформаційні ресурси

1. Одеський національний медичний університет: https://onmedu.edu.ua/
2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 25. **PHARMACOLOGY. PART II.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються фармакології: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.
Основні поняття: фармакологія, ліки, антидоти, шлях застосування, показання.

I. План

1. Переклад, критичний аналіз ситуативних завдань, клінічних кейсів.
2. Опис специфіки фармакологічної терапії англійською мовою.

II. Практичні завдання, які виконуватимуться

Exercise 1. Read and translate the tests. (Основна [1, с. 212-221])

1. A patient with urolithiasis has developed severe pain attacks. For pain shock prevention he was administered an antispasmodic narcotic analgesic along with atropine. Name this drug:
A. Promedol
B. Nalorphine
C. Tramadol
D. Ethylmorphine hydrochloride
E. Morphine hydrochloride

2. A patient with acute myocardial infarction has been administered heparin as a part of complex therapy. Some time after heparin injection the patient developed hematuria. What heparin antagonist should be injected to remove the complication?
A. Protamine sulfate
B. Vicasol
C. Aminocaproic acid
D. Neodicumarin
E. Fibrinogen

3. A 16-year-old young man suffering from seasonal allergic rhinitis has been prescribed a highly active second-generation H1 blocker, which can be characterized by absence of marked sedative action. Name this drug:
A. Loratadine
B. Pipolphen
C. Chloropyramine (Suprastin)
D. Indometacin
E. Erythromycin

4. UN volunteers have arrived in Nigeria to assist the locals in aftermath of earthquakes. What drug should they prescribe for individual chemoprophylaxis of malaria?
A. Chingamin
B. Pyrantel
C. Pyrimethamine (Chloridinum)
D. Primaquine
E. Interferon (Laferon)

5. A patient presents with dry peeling skin, frequent cases of acute respiratory diseases, xerophthalmia. What vitamin preparation should be prescribed in this case?
A. Retinol acetate
B. Thiamine
C. Cyanocobalamin
D. Menadione (Vikasolum)
E. Ergocalciferol

6. Prescription of penicillin G sodium salt has caused development of neurotoxic effects (hallucinations, convulsions). Such reaction is the result of antagonism with the following neurotransmitter:
A. GABA
B. Dopamine
C. Serotonin
D. Adenosine
E. Acetylcholine

7. Name the halogen-containing antiseptic with fungicidal properties, which is used to treat dermatomycosis:
A. Iodine solution
B. Formalin solution
C. Methylene blue
D. Brilliant green
E. Boric acid solution

8. A patient with arthritis has been prescribed an anti-inflammatory selective COX-2 inhibitor. Select this drug among those given below:
A. Celecoxib
B. Phenylbutazone (Butadion)
C. Dimethylsulfoxide (Dimexid)
D. Indometacin
E. Metamizole (Analgin)

9. A patient after disrupted cerebral circulation has developed paralysis. Choose the anticholinesterase drug to be prescribed in this case:
A. Proserin
B. Cordiamin
C. Aceclidine
D. Methacin
E. Hexamethonium (Benzohexonium)

10. A 5-year-old child has been diagnosed with acute right distal pneumonia. Sputum inoculation revealed that the causative agent is resistant to penicillin and sensitive to macrolides. What drug should be prescribed?
A. Azithromycin
B. Tetracycline
C. Gentamycin
D. Streptomycin
E. Ampicillin

11. Despite the administration of cardiotonics and thiazide diuretic a patient with chronic heart failure has persistent edemas and the risk of ascites arose. What medication should be administered to enhance the diuretic effect of the administered drugs?

A. Spironolactone
B. Furosemide
C. Amiloride
D. Clopamide
E. Manithol

12. When treating a patient with chronic cardiac failure a doctor detected bradycardia and deterioration of the patient's general state. Such condition is caused by cumulative effect of a drug. Which drug of those listed below has cumulative action?
A. Digoxin
B. Diphenhydramine (Dimedrol)
C. Hydrochlorothiazide
D. Isosorbide
E. Retinol acetate

13. A patient is diagnosed with acute morphine hydrochloride intoxication. Prescribe the oxidizing agent for gastric lavage:
A. Potassium permanganate
B. Chloramine
C. Sulfocamphocainum (Procaine + Sulfocamphoric acid)
D. Cerigel
E. Chlorhexidine (bi)gluconate

14. A patient has been given atropine sulfate for rapid relief of spastic colon symptoms. The use of this drug is contraindicated in the following disease:
A. Glaucoma
B. Bronchial asthma
C. Bradycardia
D. Hypotension
E. Gastric ulcer

15. A 47-year-old man developed intestinal colic against the background of essential hypertension. In this situation it would be most efficient to arrest the colic by administering drugs of the following group:
A. Myotropic antispasmodics
B. Anticholinesterase agents
C. Sympathomimetics
D. M-cholinomimetics
E. Adrenomimetics

16. A patient has developed paroxysmal ventricular tachycardia against the background of cardiac infarction. What antiarrhythmic drug should be chosen to avoid lowering cardiac output?
A. Lidocaine hydrochloride
B. Procainamide
C. Verapamil
D. Propranolol
E. Potassium chloride

17. Prolonged treatment of hypothyroidism has caused general dystrophy, dental caries, tachycardia, tremor of extremities. What drug is the cause of these side effects?
A. L-thyroxin
B. Humulin (Human insulin)
C. Parathyreoidinum
D. Thyrocalcitonin
E. Prednisolone

18. To treat rheumatoid arthritis a 65-year-old woman was prescribed an immunosuppressive hormonal drug as a part of her complex therapy. Name this drug:
A. Prednisolone
B. Thymus cytomedins (Thymalin)
C. Chloropyramine (Suprastin)
D. Riboflavin
E. Fercovenum

19. An 18-year-old patient has developed candidiasis (thrush) after the case of pneumonia treated with β-lactam antibiotic. What antimycotic agent should be prescribed?
A. Fluconazole
B. Streptomycin
C. Ampicillin
D. Phthalylsulfathiazole
E. Trimethoprim/sulfamethoxazole (Bi-septol)

20. A woman poisoned with unknown substance was hospitalised in a toxicological department. What group of drugs can be administered to decrease absorption and introduction of the poison to her body?
A. Adsorbents
B. Neuroleptics
C. Antioxidants
D. Organic nitrates
E. Cholinesterase inhibitors

Exercise 3. Translate the word combinations into Ukrainian:

Suppress the central nervous system; several miscarriages in anamnesis; facilitate carrying of a pregnancy; intestinal peristalsis failed to restore; admission room; complaints of edemas, rapid heart rate and dyspnea; diagnosed with chronic heart failure; impaired vision of close objects; dilated pupils; indistinct speech; indicate overdosage of a drug; develop water retention; concomitant disease exacerbated; cancel prescription of a drug; necessitate cancellation; prescribe a drug with mucolytic action; specify the sleep-inducing mechanism of a drug; an appropriate drug; remove the complication; absence of marked sedative action; persistent edemas.

Exercise 4. Give synonyms of the following words:

prescribe		fast	
lower		worsening	
treatment		detect	
adverse effects		medication	
stop		excitation	

Exercise 5. Fill the table with the missing parts of speech:

verb	noun	Adjective	adverb
prescribe			
		active	
necessitate			
	agitation		
		prolonged	
	prevention		
improve			
	admission		
	risk		
	coagulant		

Exercise 6. Fill the gaps in the text with the missing parts:

POISONING BY BELLADONNA ALKALOIDS

Deliberate or accidental ingestion of belladonna alkaloids or other classes of drugs 1____ is a major cause of poisonings. Infants and young children are especially susceptible to the toxic effects of atropinic drugs. Indeed, many cases of intoxication in children have resulted from 2____. Serious intoxication may occur in children who 3_____ containing belladonna alkaloids. The diagnosis of atropine poisoning is suggested by 4_____ – dry mouth, mydriasis, blurred vision, hot dry skin, and, in addition, hyperreexia, excitement, hallucinations, delirium and later, cerebral depression and coma. As it was described with characteristic American verbal felicity – "hot as a hare, blind as a bat, dry as a bone, red as a beet and mad as a hen".

The treatment of atropine (and other anticholinergic drugs) poisoning is on general lines. Measures to limit intestinal absorption should be initiated without delay 5_____. For symptomatic treatment, anticholinesterase drug (physostigmine) is the rational therapy. This agent enters the central nervous system and 6_____. Physostigmine 1-4 mg i.v. or i.m. is effective, though it may need repeating, 7_____. If marked excitement is present, diazepam is the most suitable agent 8 _____Ice bags and alcohol sponges help to reduce fever, especially in children.

a. ingest berries or seeds
b. a wide-spread paralysis of parasympathetic innervation
c. if the poison has been taken orally
d. with atropinic properties
e. reverses both the central and peripheral effects
f. for sedation and for control of convulsion
g. as its action (1-2 hours) is shorter than that of atropine
h. conjunctival instillation of atropine eye-drops

Exercise 7. Answer the questions to the tests above:

1. What is glucuronidation?
2. What is a specific form of penetrating trauma to the skin that results from a knife or a similar pointed object called?
3. What is the inability to rest or relax called?
4. What are the symptoms of precipitated withdrawal?
5. What does feeling "jittery" mean?
6. What is SSRI?
7. What is MAO inhibitors?
8. What kind of drugs are tricyclics?

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2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 26. **PHARMACOLOGY. PART III.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються фармакології: їх переклад, особливості словотворення, аналіз елементів греко-латинського походження.
Основні поняття: фармакологія, ліки, антидоти, шлях застосування, показання.

I. План

1. Переклад, критичний аналіз ситуативних завдань, клінічних кейсів.
2. Опис специфіки фармакологічної терапії англійською мовою.

II. Практичні завдання, які виконуватимуться

Exercise 1. Read and translate the tests. (Основна [1, с. 228-238])

1. A 20-year-old patient complains of morbid thirst and hyperdiuresis (up to 10 l daily). Glucose concentration in blood is normal but it is absent in urine. The patient has been diagnosed with diabetes insipidus. What hormonal drug is the most appropriate for management of this disorder?
A. Vasopressin
B. Cortisol
C. Thyroxin
D. Oxytocin
E. Insulin

2. A nurse accidentally injected a nearly double dose of insulin to a patient with diabetes mellitus. The patient lapsed into a hypoglycemic coma. What drug should be injected in order to help him out of coma?
A. Glucose
B. Lidase
C. Insulin
D. Somatotropin
E. Noradrenaline

3. While under barbituric anaesthesia a year-old male patient developed respiratory inhibition. Anesthesiologist made him a 10 ml intravenous injection of 0,5% bemegride solution. The patient's condition got better, the pulmonary ventilation volume increased. What phenomenon underlies the interaction of these medications?
A. Direct antagonism
B. Indirect antagonism
C. Unilateral antagonism
D. Direct synergism
E. Indirect synergism

4. After 4 months of treatment for tuberculosis the patient began complaining of toes and fingers numbness, sensation of creeps. He was diagnosed with polyneuritis. What antituberculous drug might have caused these complications?
A. Isoniazid
B. Rifampicin
C. Ciprofloxacin
D. Sodium salt of benzylpenicillin

E. Alcohol iodine solution

5. A patient with epilepsy and depressive reaction has been administered a drug that reduced epilepsy manifestations and improved the patient's psychic condition.
A. Sodium valproate
B. Ethosuxemide
C. Amitriptyline
D. Phenytoin
E. Phenobarbital

6. A patient diagnosed with morphinism has been admitted to the narcological department. A doctor noted a decrease in pharmacological activity of morphine. Repetitive use of a drug may result in tolerance to its effect, and this phenomenon is called:
A. Addiction
B. Cumulation
C. Tachyphylaxis
D. Antagonism
E. Allergy

7. A man got poisoned with mushrooms. They contain muscarine that stimulates muscarinic cholinoreceptors. What symptom is typical for poisoning with inedible mushrooms?
A. Miosis
B. Mydriasis
C. Bronchi dilation
D. Heart rate rise
E. Arterial pressure rise

8. In spite of treatment with cardiotonics and thiazide diuretic a patient suffering from chronic cardiac failure still presents with edemata and faces a risk of ascites. What medication should be administered in order to increase the diuretic effect of the above mentioned drugs?
A. Spironolactone
B. Furosemide
C. Amiloride
D. Clopamide
E. Manithol

9. A 66-year-old female patient got intravenous injection of magnesium sulfate solution for the purpose of elimination of hypertensive crisis. But arterial pressure didn't go down and after repeated introduction of the same preparation there appeared sluggishness, slow response, inhibition of consciousness and respiration. What preparation is antagonist of magnesium sulfate and can eliminate symptoms of its overdose?
A. Calcium chloride
B. Potassium chloride
C. Sodium chloride
D. Activated carbon
E. Potassium permanganate

10. A patient underwent appendectomy. In the postoperative period he has been taking an antibiotic. The patient complains about hearing impairment and vestibular disorders. What group of antibiotics has such by-effects?
A. Aminoglycosides

B. Penicillins
C. Tetracyclines
D. Macrolides
E. Cephalosporins

11. A patient consulted a dentist about itching and burning in the oral cavity; high temperature. The patient was diagnosed with trichomonal gingivostomatitis. What drug should be chosen for his treatment?
A. Metronidazole
B. Ampicillin
C. Doxycycline hydrochloride
D. Gentamicin sulfate
E. Nystatin

12. A patient has been diagnosed with transmural myocardial infarction. What drug should be given in order to prevent cardiogenic shock?
A. Promedol
B. Reserpin
C. Octadine
D. Phentolamine
E. Analgin

13. A patient suffers from pulmonary tuberculosis. During treatment neuritis of visual nerve arose. What drug has caused this by-effect?
A. Isoniazid
B. Ethambutol
C. Kanamycin
D. Rifampicin
E. Streptomycin

14. For relief of hypertensive crisis a doctor administered a patient a drug that apart from antihypertensive effect has also sedative, spasmolytic and anticonvulsive effect. The drug was taken parenterally. When it is taken enterally it acts as a laxative and cholagogue. What drug was administered?
A. Magnesium sulfate
B. Dibasolum
C. Reserpine
D. No-spa
E. Apressin

15. A patient with diabetes mellitus complicated by angiopathy has been recommended a drug which is a sulphonyl urease derivate of the second generation. It improves microcirculation and is known for its relatively good tolerance. What drug is it?
A. Glibenclamide
B. Glibutidum
C. Insulin
D. Acarbose
E. Adrenalin

16. A 30-year-old patient complains about having abdominal pain and diarrhea for five days; body temperature rise up to 37, $5^{o}C$ along with chills. The day before a patient had been in a forest and drunk from an open water reservoir. Laboratory analyses enabled to make the following diagnosis: amebic dysentery. What is the drug of choice for its treatment?

A. Metronidazole
B. Furazolidonum
C. Levomycetin
D. Phthalazol
E. Emetine hydrochloride

17. A patient suffering from stomach ulcer has been treated with an antacid drug almagel. For acute bronchitis treatment he was prescribed the antibiotic methacycline. However within next 5 days the fever didn't fall, cough and sputum nature remained unchanged. The physician came to the conclusion that the drugs were incompatible. What type of drug incompatibility is the case?
A. Pharmacokinetic, absorption stage
B. Pharmacokinetic, biotransformation stage
C. Pharmaceutic
D. Pharmacodynamic
E. Direct antagonism

18. A patient suffering from myasthenia has been administered proserin. After its administration the patient has got nausea, diarrhea, twitch of tongue and skeletal muscles. What drug would help to eliminate the intoxication?
A. Atropine sulfate
B. Physostigmine
C. Pyridostigmine bromide
D. Isadrine
E. Mesatonum

19. A patient with essential hypertension has a high rate of blood renin. Which of antihypertensive drugs should be preferred?
A. Lisinopril
B. Propranolol
C. Prazosinum
D. Nifedipine
E. Dichlothiazide

20. This drug has a destructive effect on erythrocytic forms of malarial plasmodia and dysenteric amoebae. It is used for treatment and prevention of such diseases as malaria, amebiasis and interstitial disease. What drug is it?
A. Chingamin
B. Emetine hydrochloride
C. Tetracycline
D. Erythromycin
E. Quinine

Exercise 2. Translate the word combinations into Ukrainian:

Detect ascarid eggs; be born asphyxiated; bluish color of mucosa; prescribed for intravenous administration; arthritis of mandibular joint; be delivered to the resuscitation unit unconscious; alcoholic solution of unknown origin; broad spectrum antibiotic; causal treatment drug; intermittent pulse; salts of high-density metals; male patient with bladder atony; complain of photoreception disorder; prolonged nosebleeds; efficient in remedying a condition; a patient with biliary dyskinesia and constipations; laxative effect; manifestation of adverse reactions; unbearable spasmodic pain; persistent edemata; enhance the diuretic effect; recurrent attacks of epileptic seizures; reveal numerous subcutaneous hemorrhages; causative agent resistant to penicillin; take an antacid drug for heartburn elimination; a sensation of stomach swelling; complain of morbid thirst and hyperdiuresis.

Exercise 3. Find synonyms of the following words in the tests:

urinative		bring	
primary hypertension		wide	

efficient		epistaxis	
suitable		treat	
respiration		obstipation	

Exercise 4. Fill the table with the missing parts of speech:

verb	noun	adjective	adverb
		destructive	
list			
	conclusion		
supply			
		visual	
face			
	response		
enable			
	choice		
change			

Exercise 5. Fill the gaps in the text with the missing parts:

cardiac muscle contraction, cardiac rhythm, electrical impulse, intracellular calcium, irregular impulses, side effects, the heartbeat, the shortening

Cardiac glycosides

Cardiac glycosides have disadvantageous 1._____. They include a tendency to block conduction of the 2._____ that causes contraction as it passes from the atria to the ventricles of the heart (heart block). Cardiac glycosides also have a tendency to produce an abnormal 3._____ by causing electrical impulses to be generated at points in the heart other than the normal pacemaker region, the cells that rhythmically maintain 4._____. These 5._____ result in ectopic heartbeats, which are out of sequence with the normal cardiac rhythm.

Cardiac glycosides are believed to increase the force of 6._____ by binding to and inhibiting the action of a membrane enzyme that extrudes sodium ions from the cell interior. These drugs also enhance the release of calcium from internal stores, resulting in a rise in 7._____. This subsequently increases the force of contraction, since intracellular calcium ions are responsible for initiating 8._____ of muscle cells.

Exercise 6. Match the terms to their definitions.

allergic dermatitis, antidote, appendectomy, arrhythmia, diarrhea, drug incompatibility, hypehydration, insomnia, nausea, photoreception, resuscitation unit, salivation

1. Water intoxication or water poisoning.
2. A chemical, especially a drug, that limits the effects of a poison.
3. A feeling of sickness with an inclination to vomit.
4. The undesirable reaction between a drug and a solution, container or another drug.
5. The condition of having at least three loose, liquid, or watery bowel movements each day.
6. Any problem in the rate or rhythm of a person's heartbeat.
7. The act of producing saliva (= liquid) in the mouth.
8. The surgical removal of the appendix, which is located in the right lower side of the abdomen.
9. An intensive care room.
10. The condition of being unable to sleep, over a period of time.

11. Ability of color vision and night vision.
12. An itchy, swollen rash caused by skin's reaction to an allergen or irritant in the environment.

Exercise 7. Translate the sentences into English:
1. Наведені сечогінні засоби не мають сечогінну дію на пацієнта із хворобою Аддісона.
2. Хворому з кардіогенним шоком, гіпотонією, асфіксією та набряками зробили ін'єкцію неглікозидного кардіотоніка.
3. Пацієнт з первинною гіпертензією має високий рівень реніну крові.
4. Лікар дійшов висновку, що препарати несумісні.
5. Для купірування гіпертонічного кризу лікар призначив пацієнту препарат, який крім антигіпертензивної дії має ще й седативну, спазмолітичну та протисудомну дію.
6. Антиангінальний препарат, який зменшує споживання міокарда кисню також покращує кровопостачання міокарда.
7. Пацієнт порадився зі стоматологом щодо свербежу та печіння в ротовій порожнині.
8. 55-річного чоловіка доставили до реанімаційного відділення без свідомості.
9. Пацієнт 30 років із минулим анамнезом вірусного гепатиту скаржиться на тривалі кровотечі з носа.
10. Пацієнт впав у гіпоглікемічну кому.

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Електронні інформаційні ресурси

1. Одеський національний медичний університет: https://onmedu.edu.ua/
2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема № 27. **GASTROINTESTINAL DRUGS.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються фармакологічного лікування хвороб ШКТ.

Основні поняття: фармакологія, гастрит, виразка шлунку, антациди.

І. План

1. Визначення видів взаємодії, показань до призначення, ознак побічної дії тих чи інших медичних препаратів.
2. Складання рецептів та призначень.
3. Пояснення пацієнтові особливостей курсу лікування.

ІІ. Практичні завдання, які виконуватимуться
Exercise 1. Read the text:

GASTROINTESTINAL DRUGS

Antacid (aluminum hydroxide, magnesium hydroxide, aluminum carbonate, calcium carbonate, sodium bicarbonate, bismuth subsalicylate) is any of a group of drugs that neutralize acid in the digestive system. Hydrochloric acid, produced in the stomach, is important to digestion. However, this acid can cause pain when it comes in contact with peptic ulcers, sores that can occur in the lining of the esophagus, stomach, or duodenum. Antacids help relieve or prevent pain associated with peptic ulcers by neutralizing this acid. People also take antacids to stop the pain of heartburn and indigestion.

Many antacid products contain compounds of aluminum, magnesium, or, often, both. These chemicals react with acids to form more neutral compounds that do not irritate peptic ulcers. By relieving irritation, antacids can also help promote healing of the ulcers. Many doctors recommend their use along with other antiulcer drugs, such as antibiotics and histamine H2-receptor antagonists (for example, cimetidine).

Antacids come in tablet, capsule, and liquid form. Commonly used antacids include such brand-name products as Maalox and Mylanta. Turns, another common antacid, contains a compound of calcium that is helpful for digestion but not recommended for ulcer treatment. These drugs ordinarily do not cause harmful side effects, and a doctor's prescription is not needed to purchase them. However, antacids that contain magnesium hydroxide can cause diarrhea, while those with aluminum hydroxide can cause constipation. Problems also may develop when antacids are used for long periods. For example, extensive use of antacids that contain calcium carbonate can cause too much calcium to accumulate in the body. High calcium levels can lead to kidney damage and other problems.

H-2 antagonists (cimetidine, ranitidine, famotidine, and nizatidine) promote ulcer healing by reducing the acid and digestive enzymes in the stomach and duodenum. These highly effective drugs are taken only once or twice a day. Most cause few serious side effects, and several are now available without a prescription.

Omeprazole and lansoprazole are very strong drugs that inhibit the production of the enzymes needed for the stomach to make acid. These drugs can completely inhibit acid secretion and have long-lasting effects. They promote healing in a greater percentage of people in a shorter

period of time than H-2 antagonists do. They are particularly useful in treating people with esophagitis and people who have other conditions that affect gastric acid secretion.

Antibiotics (bismuth subsalicylate, tetracycline, metronidazole, amoxicillin) are being increasingly used when the bacterium Helicobacter pylori is the major underlying cause of ulcers. The treatment consists of one or more antibiotics and a drug to reduce or neutralize stomach acid. Combinations of bismuth subsalicylate, tetracycline, and metronidazole or aifloxicillin are most commonly used. Omeprazole and an antibiotic are also an effective combination. Such treatment may relieve ulcer symptoms even if ulcers have resisted previous treatment or have recurred repeatedly.

Exercise 2. Answer the questions to the text in exercise 1:

1.When can hydrochloric acid cause pain in the stomach?
2. How do antacids help relieve or prevent pain associated with peptic ulcers?
3. What do antacids contain?
4. What problems may result from the long-term use of antacids?
5. How can H-2 antagonists promote ulcer healing?
6. How often are H-2 antagonists taken a day?
7. What drugs can completely inhibit acid secretion?
8. When are antibiotics prescribed for gastrointestinal disorders?

Exercise 3. Complete the sentences below:

1. Hydrochloric acid is important ….
2. … can cause pain when it comes in contact with peptic ulcers.
3. People take antacids to stop ….
4. Many antacid products contain compounds of …
5. By relieving irritation, antacids can help promote …
6. Antacids come in … form.
7. Antacids ordinarily do not cause …
8. … promote ulcer healing by reducing the acid and digestive enzymes in the stomach and duodenum.

Exercise 4. Fill in the gaps with the prepositions from the table:

of(2), over, without, for, by, with, in

1. ... relieving irritation, antacids also can help promote healing of the ulcers.
2. These drugs cause few serious side effects, so they are now available ... a prescription.
3. Omeprazole and lansoprazole promote healing of a greater percentage of people ... a shorter period of time than H-2 antagonists do.
4. Hydrochloric acid, produced in the stomach, is important ... digestion.
5. The pharmacist will advise which medicines are safe to take and how to cope … problems like heartburn.
6. Brand names such as Coca-Cola and Sony are recognized all … the world.

7. People also take antacids to stop the pain … heartburn and indigestion.

8. The treatment consists … one or more antibiotics and a drug to reduce or neutralize stomach acid.

Exercise 5. Open the brackets using the verbs in the correct form:

1. Hydrochloric acid (to produce) in the stomach.

2. This acid (to cause) pain when it comes in contact with peptic ulcers.

3. Antacids help (to relieve) pain associated with peptic ulcers by neutralizing hydrochloric acid.

4. He (to take) that drug to relieve heartburn an hour ago.

5. The doctor (to recommend) him antacids with other antiulcer drugs, when he goes to see him tomorrow.

6. High calcium levels (to lead) to kidney damage and other problems.

7. Antacids (to help) promote healing of his ulcer last year.

8. Maalox and Mylanta (to use) all over the world.

Exercise 6. Read the package insert for the drug and make a summary of it commenting on the properties, composition, mechanism of action, indication, dosage and use, contraindications, side effects, storage and term of validity of the drug:

MAGASIL (MIXTURE)

COMPOSITION:
Each 10 ml of mixture contains:

Magnesium carbonate, light	500 mg
Magnesium trisilicate	500 mg
Sodium bicarbonate	500 mg

PHARMACOLOGICAL CLASSIFICATION:
Antacids (acid neutralizers)
PHARMACOLOGICAL ACTION:
Acid neutralising, diminish activity of pepsin in gastric secretion.
INDICATIONS:
For the relief of acid ingestion, heartburn, hyperacidity, dyspepsia, gastritis and reflux oesophagitis
CONTRA-INDICATIONS:
Sensitivity to any of the active ingredients
WARNINGS:
Do not use this product if you are on a sodium-restricted diet, or suffer from hypertension, of heart failure, except under the advice and supervision of a doctor.
DOSAGE AND DIRECTIONS FOR USE:
Adults: two to four medicine measurefuls every four hours.
Do not use the maximum dosage of this product for more than 2 (two) weeks, except under the

advice and supervision of a medical practitioner, or use as directed by a doctor.

SIDE EFFECTS AND SPECIAL PRECAUTIONS:

May cause diarrhoea. Release of carbon dioxide may cause discomfort. MAGASIL may interfere with the absorption of other medicines if taken concomitantly.

Sodium bicarbonate can cause stomach cramps and flatulence. Excessive administration of sodium bicarbonate may lead to metabolic alkalosis, especially in patients with impaired renal function. Symptoms may include shortness of breath, muscle weakness and mental disturbances such as restlessness, convulsions and comaSodium bicarbonate should be administered extremely cautiously to patients with congestive heart failure, renal impairment, and cirrhosis of the liver or hypertension and to patients receiving corticosteroids.

IDENTIFICATION:

A white homogenous mixture with a slight peppermint flavour

PRESENTATION:

Brown plastic containers of 100 mL, 200 mL, 500 mL, and 2.5 litres

STORAGE INSTRUCTIONS:

Store in a cool, dark place below 25°C.

KEEP OUT OF REACH OF CHILDREN

Список рекомендованої літератури

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Тема № 28. **ANTIBIOTICS.**

Мета: ознайомити здобувачів вищої освіти з медичними термінами, що стосуються фармакологічного застосування антибіотиків, визначенням видів взаємодії, показань до призначення, ознак побічної дії тих чи інших медичних препаратів .

Основні поняття: фармакологія, антибіотики.

I. План

1. Визначення видів взаємодії, показань до призначення, ознак побічної дії тих чи інших медичних препаратів.
2. Складання рецептів та призначень.
3. Пояснення пацієнтові особливостей курсу лікування.

II. Практичні завдання, які виконуватимуться

Exercise 1. Read the text:

ANTIBIOTICS

Antibiotic is a drug produced by certain microbes. Antibiotic substances are obtained from bacteria and fungi that live in the air, soil, and water. Most antibiotics are used by physicians to fight various diseases caused by harmful microbes.

There are different types of antibiotics, which work in their unique way. However, the two main they work include:

- A bactericidal antibiotic, such as penicillin, kills the bacteria. These drugs usually interfere with either the formation of the bacterial cell wall or its cell contents. Examples include the Beta-lactam antibiotics (penicillin derivatives (penams)), cephalosporins (cephems), monobactams, and carbapenems) and vancomycin.
- A bacteriostatic ones stop bacteria from multiplying. Bacteriostatic antibiotics limit the growth of bacteria by interfering with bacterial protein production, DNA replication, or other aspects of bacterial cellular metabolism. This group includes: tetracyclines, sulfonamides, spectinomycin, trimethoprim, chloramphenicol, macrolides and lincosamides.

It may take a few hours or days after taking the first dose before people feel better or their symptoms improve.

The first antibiotic was penicillin. Penicillin-based antibiotics, such as ampicillin, amoxicillin, and penicillin G, are still available to treat a variety of infections and have been in use for many years.

Antibiotics are selectively toxic – that is, they damage certain types of cells, but do not damage others. Many antibiotics are harmful to the cells of pathogenic (disease-causing) microbes, but they do not normally damage human cells. Physicians use these types of antibiotics to treat a variety of bacterial diseases, including gonorrhea, syphilis, and tuberculosis, and infections caused by staphylococcal and streptococcal bacteria. A small number of antibiotics, however, were

developed to attack human cells. Some of these are used to treat cancer. They are selectively toxic mostly because they only damage cells that are in the process of dividing.

Antibiotics are sometimes called "wonder drugs" because they can cure many diseases that once were often fatal. The number of deaths that are caused by meningitis, pneumonia, and scarlet fever has declined drastically since people began using antibiotics.

Antibiotics are usually taken by mouth (orally); however, they can also be administered by injection, or applied directly to the affected part of the body.

Most antibiotics start having an effect on an infection within a few hours. It is important to remember to complete the whole course of the medication to prevent the infection from coming back. If you do not complete the course, there is a higher chance the bacteria may become resistant to future treatments – because the ones that survive when you did not complete the course have had some exposure to the antibiotic and may consequently have built up a resistance to it. Even if you are feeling better, you still need to complete the course.

Some antibiotics should not be consumed with certain foods and drinks. Others should not be taken with food in your stomach – these would normally be taken about an hour before meals, or two hours after. It is crucial that you follow the instructions correctly if you want the medication to be effective, for example, if you are taking metronidazole do not consume alcohol. Dairy products should not be consumed if you are taking tetracyclines, as they might affect the absorption of the medication.

Exercise 2. Answer the questions to the text in exercise 1:

1. How are antibiotics obtained?

2. What is the difference between bactericidal and bacteriostatic antibiotics?

3. What diseases may antibiotics be used in?

4. What cells are many antibiotics normally harmful to?

5. What is selective toxicity?

6. Why do we call some antibiotics as "wonder drugs"?

7. What are the routes of taking antibiotics?

8. How long does it take most antibiotics to have an effect on an infection?

9. Why is it necessary to complete the whole course of antibiotics?

Exercise 3. Agree or disagree with the following statements:

1. Antibiotic is a drug produced by certain viruses.

2. Antibiotics damage all kinds of cells in the human body.

3. Antibiotics are sometimes called "wonder drugs" because they can cure many diseases that once were often fatal.

4. Antibiotics can be administered in different ways.

5. Most antibiotics start having an effect on an infection within a few seconds.

6. Dairy products should be consumed if you are taking tetracyclines.

7. Some antibiotics are used to treat cancer.

8. Antibiotics are selectively toxic mostly because they only damage cells that are in the process of dividing.

Exercise 4. Fill in the gaps with the prepositions from the table:

to(2); in; of(2); by(2); on

1. The first antibiotic was discovered … Alexander Fleming in 1928 in a significant breakthrough (прорив) in medical science.

2. Some antibiotics are "bactericidal", meaning that they work … killing bacteria.

3. Some antibiotics can be used to treat a wide range … infections and are known as "broad-spectrum" antibiotics.

4. The most common side effects … antibiotics are diarrhea, nausea, vomiting.

5. Some people are allergic… antibiotics, particularly penicillin.

6. Allergic reactions cause swelling of the face, itching and a skin rash and, … severe cases, breathing difficulties.

7. The type of antibiotics you take depends … the type of infection you have and what kind of antibiotics are known to be effective.

8. Bacteria may become resistant … future treatment.

Exercise 5. Put questions to the underlined words:

1. The discovery of antibiotics greatly improved the quality of human life in the twentieth century.

2. Antibiotic drugs are made from living organisms such as fungi, molds.

3. Antibiotics can also be produced synthetically (artificially).

4. Prontosil was discovered in 1935 by German chemist Gerhard Domagk.

5. Bacterial resistance occurs when some bacteria survive attack by the antibacterial drug.

6. In 1928, British bacteriologist Alexander Fleming discovered the bacteria-killing property of penicillin.

7. The antibiotic works by blocking the formation of the bacterial cell wall, thus killing the bacteria.

8. Most antibiotics start having an effect on an infection within a few hours.

Exercise 6. Open the brackets using the verb in the correct form:

1. There are various classes or groups of antibiotics, which (to depend) on their chemical structure.

2. Penicillins, cephalosporins, and other antibiotics (to regard) as subclasses of beta-lactam drugs.

3. Experts advise using antibiotics only when they (to need).

4. Antibiotic resistance (to occur) when germs no longer respond to the antibiotic designed to kill them.

5. As the man who discovered the first antibiotic (to predict), drug resistance is starting to become commonplace.

6. Antibiotic resistance (to consider) one of the greatest public health challenges.

7. Antibiotics (not to be) effective against viruses.

8. Bowel inflammation (to lead) to severe, bloody diarrhea.

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Електронні інформаційні ресурси

1. Одеський національний медичний університет: https://onmedu.edu.ua/
2. Інформаційні матеріали: http://www.info.odmu.edu.ua

Тема №29: SYSTEMATIZATION: THE MAIN GROUPS OF TERMS USED IN MEDICINE.

Мета: систематизувати отримані здобувачами вищої освіти знання, вміння та навички з медичної англійської мови професійного спрямування.

Основні поняття: діабет, СНІД, медична термінологія.

І. План

1. Закріплення навичок пошукового та аналітичного читання.
2. Виконання тестів КРОК 1.

ІІ. Практичні завдання, які виконуватимуться

Exercise 1. Read the text.

DIABETES

Diabetes mellitus, often simply diabetes, is a group of metabolic diseases in which a person has high blood sugar, either because the body does not produce enough insulin, or because cells do not respond to the insulin that is produced. At least 171 million people worldwide suffer from diabetes, or 2.8% of the population.

There are three main types of diabetes:

Type 1 diabetes results from the body's failure to produce insulin, and presently requires the person to inject insulin (insulin-dependent diabetes mellitus, IDDM for short, and juvenile diabetes). Type 1 diabetes is partly inherited and then triggered by certain infections.

Type 2 diabetes results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes combined with an absolute insulin deficiency (non-insulin-dependent diabetes mellitus and adult-onset diabetes). Type 2 diabetes is due primarily to lifestyle factors and genetics, particularly excessive body weight and not enough exercise.

Gestational diabetes is when pregnant women who have never had diabetes before, have a high blood glucose level during pregnancy. It may precede development of type 2 DM.

The classical symptoms of diabetes are polyuria (frequent urination), polydipsia (increased thirst) and polyphagia (increased hunger). The other symptoms are:

- unexplained weight loss;
- presence of ketones in the urine (ketones are a byproduct of the breakdown of muscle and fat that happens when there is not enough available insulin);
- fatigue;
- irritability;
- blurred vision is a common complaint leading to a diabetes diagnosis; Type 1 should always be suspected in cases of rapid vision change, whereas with Type 2 change is generally more gradual;
- slow-healing sores;
- frequent infections, such as gums or skin infections and vaginal infections.

Symptoms may develop rapidly (weeks or months) in type 1 diabetes while type 2 diabetes they usually develop much more slowly and may be subtle or absent. The elevated plasma glucose levels cause marked glycosuria and diuresis resulting in dehydration.

Risk factors for Type 1 diabetes include: a family history (parent or sibling) of Type 1 diabetes; injury to the pancreas (such as by infection, tumor, surgery or accident); presence of autoantibodies (antibodies that mistakenly attack your own body's tissues or organs); physical stress (such as surgery or illness); illnesses caused by viruses.

Risk factors for Type 2 diabetes include: family history (parent or sibling) of Type 2 diabetes; overweight; high blood pressure; low HDL cholesterol (the "good" cholesterol); physically inactive; age 45 or older; gestational diabetes; a history of heart disease or stroke; being a smoker.

All forms of diabetes have been treatable since insulin became available in 1921, and type 2 diabetes may be controlled with medications. Both type 1 and 2 are chronic conditions that usually cannot be cured. Prevention and treatment involve a healthy diet, physical exercise and maintaining a normal body weight. Treatment regimens differ according to the diabetes type. All patients should be instructed in glucose self-monitoring.

The main complications of diabetes mellitus are diabetic retinopathy, diabetic neuropathy, diabetic nephropathy, foot ulcers. Serious long-term complications include cardiovascular disease, stroke, chronic kidney failure and damage to the eyes.

Exercise 2. Answer the questions to the text:

1. What is diabetes mellitus?
2. How many types of diabetes you know?
3. What is Type 1 diabetes?
4. What is Type 2 diabetes?
5. What is gestational diabetes?
6. When did insulin become available?
7. What are the symptoms of diabetes?
8. What are the risk factors for Type 1 and Type 2 diabetes?
9. How is diabetes controlled?
10. What are the main complications of diabetes?

Exercise 3. Say if the statements are true or false according to the text:

1. Diabetes mellitus is characterized by high blood sugar level.
2. It's a very common disease in the world.
3. There are 2 types of diabetes.
4. Gestational diabetes is diabetes in young children
5. Polydipsia is a classical symptom of diabetes.
6. In type 1 diabetes symptoms develop slowly.
7. Diabetes is an infectious disease
8. Diabetes type 1 is controlled with insulin
9. All diabetic patients must control their level of blood sugar.
10. Diabetic retinopathy, diabetic neuropathy, diabetic nephropathy, foot ulcers are common complications of the disease.

Exercise 4. Read the text and answer the questions below:

AIDS
Acquired Immune Deficiency Syndrome

Human immunodeficiency virus (HIV) causes acquired immunodeficiency syndrome (AIDS), a condition in which progressive failure of the immune system contributes to life-threatening opportunistic infections which affect any organ system such as respiratory tract, digestive tract, endocrine system, etc.

HIV infection is considered pandemic by the World Health Organization (WHO) infecting about 0,6 % of the world's population.

Two main strains of HIV-1 and HIV-2 cause AIDS. HIV-1 is more common in the Western Hemisphere. Untreated HIV-1 cases eventually lead to AIDS. The patients die from opportunistic infections or malignant tumours associated with the progressive failure of the immune system. HIV-2 is more prevalent in West Africa and it is transmitted less easily and progresses less quickly to AIDS than HIV-1. In both strains, the virus may persist at low levels for years in a host without

causing disease. The only sign of infection is the presence of antibodies against the virus. Once immunodeficiency occurs, if left untreated, death usually follows within 2 to 3 years of the first onset of symptoms.

The AIDS virus is transmitted through bodily fluids such as blood, breast milk, etc. Casual contact with the infected person doesn't result in the transmission of the virus. The most efficient methods of HIV transmission include sexual, sharing needles for IV drugs, and receiving transfusions of contaminated blood. An infected mother may pass the virus to her unborn child. Susceptibility to HIV infection increases if there is a break in the skin or mucous membrane, which allows the virus to enter the blood stream.

The stages of HIV infection are acute infection (also known as primary infection), latency (window period) and AIDS. During 2-4 weeks post-exposure a person may develop an influenza-like illness, the symptoms of which may include fever, swollen lymph nodes, and pharyngitis, rash and last for several weeks. The latency stage involves few or no symptoms at all and can last from 2 weeks to 20 years. AIDS, the final stage of HIV infection, is defined by various opportunistic infections and cancers that finally lead to deaths.

Untreated, HIV can progress to AIDS within a decade and, without treatment, life expectancy after diagnosis is about 3 years.

This may be shorter if the person develops a severe opportunistic illness. However, treatment with antiretroviral drugs can prevent AIDS from developing.

If AIDS does develop, it means that the immune system is severely compromised, that is, weakened to the point where it can no longer successfully respond against most diseases and infections.

People living with AIDS are vulnerable to a wide range of illnesses, including:

- pneumonia
- tuberculosis
- oral thrush, a fungal condition in the mouth or throat
- cytomegalovirus (CMV), a type of herpes virus
- cryptococcal meningitis, a fungal condition in the brain
- toxoplasmosis, a brain condition caused by a parasite
- cryptosporidiosis, a condition caused by an intestinal parasite
- cancer.

The shortened life expectancy linked with untreated AIDS is not a direct result of the syndrome itself. Rather, it is a result of the diseases and complications that arise from having an immune system weakened by AIDS.

There is currently no available vaccine for HIV or cure for HIV or AIDS. The only known methods of prevention are based on avoiding exposure to the virus or an antiretroviral treatment which can just slow the course of the disease. Antiretroviral treatment reduces both the mortality and the morbidity of HIV infection. But, these drugs have some side-effects such as diarrhea, malaise, nausea and fatigue. They don't completely eradicate the virus, but can greatly prolong the lives of patients infected with HIV.

1. What is AIDS?
2. What systems does HIV damage?
3. What is the difference between two HIV strains?
4. How is HIV transmitted?
5. What are the stages of HIV infection?
6. What symptoms is each HIV stage characterized by?
7. What illnesses are AIDS patients vulnerable to?
8. What treatment for HIV or AIDS exists nowadays?
9. What is the action of antiretroviral drugs?
10. What are the adverse reactions of HIV drugs?

Exercise 5. Find the correct answers:

1. HIV destroys the … system first.
a) immune b) respiratory c) nervous d) circulatory

2. … strains of HIV cause AIDS.
a) 3 b)4 c)2 d) 6

3. Once immunodeficiency occurs and is not treated, death usually follows …years of the first onset of symptoms.
a) 1-2 b) 2-3 c) 4-5 d) 10-11

4. The AIDS virus is transmitted …
a) by casual contact b) by talking c) through bodily fluids d) by sharing clothes

5. HIV infection stages are acute infection (also known as primary infection), latency (window period) and …
a) the second stage b) AIDS c) HIV 2 d) death

6. During 2-4 weeks post-exposure a person may develop …
a) tumours b) ulcers c)influenza-like symptoms d) diarrhea

7. Treatment with … can prevent AIDS from developing.
a) antiretroviral drugs b)antibiotics c)barbiturates d) vitamins

8. People living with AIDS are NOT more vulnerable to … than others:
a) cancer b) tuberculosis c) caries d) toxoplasmosis

9. AIDS is a … disease.
a) bacterial b) infectious c) hereditary d)genetic

10) …is NOT a characteristic side-effect of AIDS.
a) diarrhea b)headache c)nausea d) fatigue

Exercise 6. Read the KROK tests:

1. An .....is a method of quantitative analysis for determining the concentration of an acid or base.
a) back titration ***b) acid - base titration*** c) direct titration d) displacement titration
2. An .....is a class of balance designed to measure small mass in the sub-milligram range.
a) analytical chemistry b) analytical analysis c) analytical determination ***d) analytical balance***
3 .....is an electrode of the device connected to the positive pole of battery.
a) anode b) cathode c) electrode d) wire
4 .....is a nontoxic or minimally toxic gas which reduces or displaces the normal oxygen concentration in breathing air.
a) asphyxiating gas b) propan gas c) methane gas d) carbon monoxide
5 ..... occurs when two reagents are used - one that reacts with the original sample, and second that reacts with the first reagent.
a) acid - base titration ***b) back titration*** c) direct titration d) displacement titration
6 ..... is a generally cylindrical container with a flat bottom.
a) bottle b) test - tube ***c) beaker*** d) burette
7 ..... is a squeeze bottle with a nozzle. It is used to rinse various pieces of laboratory

glasswares.
a) flask b) syringe c) pipette ***d) bottle***
8 .....is a graduated glass tube with a tap at one end for delivering known volumes of a liquid, especially in titrations.
a) burette b) beaker c) test - tube d) bottle
9. Lead Nitrate and Sodium Potassium Iodine are ..... that form a yellow precipitate for Lead Iodine.
a) gaseous solutions b) solid solutions ***c) colourless solutions*** d) liquid solutions
10 ..... is a piece of furniture where pharmaceutical glasswares are dried.
a) table ***b) dissicator*** c) scales d) items
11 .....is a pharmaceutical item for storage of distilled water, solutions.
a) bottle ***b) flask*** c) pipette d) beaker
12 .....is a form of volumetric analysis in which the formation of a coloured complex is used to indicate the end point of a titration.
a) complex formation titration b) direct titration c) back titration d) displacement titration
13 .....is a strong, red colour, inclining to purple.
a) green colour b) black colour c) yellow colour ***d) crimson colour***
14 .....is a way to determine the contents of a substance quantitatively.
a) direct titration b) back titration c) complex formation titration d) displacement titration
15 ..... is a second titration for metal ions that do not have a good indicator.
a) direct titration b) complex formation titration ***c) displacement titration*** d) back titration
16 .....is a colourless liquid organic compound with the chemical formula CH3COOH.
a) sulphuric acid ***b) acetic acid*** c) oxalic acid d) uric acid
17 ..... is the organic compound with the formula(CH3)2CO.
a) acetone b) acetyl c) acetylene d) alcohol
18 .....are non-aromatic compounds.
a) aldehyde b) acrylonitrile ***c) acidic*** d) aliphatic hydrocarbon
19 ..... is the amino acid that has a single hydrogen atom as its side chain.
a) anion b) aniline ***c) glycerol*** d) aromatic
20 ..... substance doesn't contain water.
a) anhydride ***b) anhydrous*** c) asymmetric d) butyl
21 .....is a organic compounds bearing the functional group R-N=N-R'.
a) benzene b) camphor c) carbohydrate ***d) azo dye***
22 ..... is a molecule that features two joined rings.
a) bicyclic molecule b) monatomic molecule c) macromolecular molecule d) neutral molecule
23 ..... is the association of a pair of homologous chromosomes physically held together by at least one DNA crossover.
a) bonding b) carbonic ***c) bivalent*** d) cation
24 .....is a lasting attraction between atoms, ions or molecules that enables the formation of chemical compounds.
a) bond b) chlorination c) coal d) configuration
25 .....is a colourless liquid with a "sweet" smell that can be detected at low levels.
a) amine ***b) carbon tetrachloride*** c) benzoic acid d) azo dye
26 ..... is an organic compound that contains a carboxyl group (C(=O)OH).
a) uric acid b) sulphuric acid c) acetic acid ***d) carboxylic acid***
27 .....is the lightweight black carbon and ash residue hydrocarbon produced by removing water and other volatile constituents from animal and vegetation substances.
a) coal b) dust ***c) charcoal*** d) sawdust

28 .....is an acid compound found in citrus fruits.
a) citric acid b) sulphuric acid c) acetic acid d) oxalic acid
29 .....is the change of the physical state of matter from gas phase into liquid phase.
a) cellulose b) carbonic c) anthracene ***d) condensation***
30 ..... is a system of connected p orbitals with delocalized electrons in a molecule, which in general lowers the overall energy of the molecule and increases stability.
a) contraction ***b) conjugation*** c) cycle d) cyanide
31 .....has to do with the uses of aggravated conditions of heat, humidity, oxygen, sunlight, vibration which speed up the normal aging processes of items.
a) accelerated ageing b) activation energy c) boiling temperature d) conjugation
32 ..... is a general process in which molecules separate or split into smaller particles such as atoms, ions or radicals, usually in a reversible manner.
a) association ***b) dissociation*** c) splitting d) combination
33 .....replicates the work of the real kidney.
a) artificial stomach b) artificial liver c) artificial rectum ***d) artificial kidney***
34 ..... of an object is the total displacement during some extended period of time, divided by that period of time.
a) average placement b) average movement ***c) average displacement*** d) average constituent
35 .....is a four carbon acid, CH3CH2CH2COOH, with an unpleasant odor.
a) butiric acid b) oxalic acid c) sulphuric acid d) acetic acid
36 ..... is defined as the concentration of surfactants above which micelles form and all additional surfactants added to the system.
a) charge b) chain ***c) critical concentration of micelle - forming*** d) coalescence
37 ..... is distributed in the form of small particles (crystals, threads, films or platelets, droplets, or bubbles) in the other, continuous phase, the dispersion medium. a) colloidal dispersion ***b) coarse - disperse system*** c) condition d) equation
38 ..... is the process by which organic substances are broken down into simpler organic matter.
a) composition b) structure c) combination ***d) decomposition***
39 ..... water can make a liquid thinner or weaker.
a) mixed ***b) diluted*** c) transferred d) drop
40 ..... is a structure that appears on the surface of an object when it is exposed to a fluid.
a) single electrical layer b) third electrical layer ***c) double electrical layer*** d) fourth electrical layer
41 ..... is the electrical intensity or "pressure" developed by a source of electrical energy such as a battery or generator.
a) electrical current ***b) electromotive force*** c) electrical cable d) electrical power
42 .....is soluble in both of fat and water and enables fat to be uniformly dispersed in water as an emulsion.
a) emulsifying agent b) equilibrium c) endothermal d) exchange
43 ..... is a type of vaporization that occurs on the surface of a liquid as it changes into the gas phase when it reaches its boiling point.
a) dimension b) emulsion ***c) evaporation*** d) decomposition
44 .....is the ease at which the material can be fused together or to the temperature or amount of heat required to melt a material.
a) fusibility b) mobility c) stationary d) movement
45 .....is a method of rapid elimination of cholesterol from the plasma.

a) absorption b) adsorption ***c) hemosorption*** d) option
46 .....is a collection of health effects that are present within 24 hours of exposure to high doses of ionizing radiation.
a) radiation ***b) acute radiation sickness*** c) X - ray d) sickness
47 .....are endocrine glands that produce a variety of hormones including adrenaline and the steroids - aldosterone and cortisol.
a) adrenal glands b) thyroid glands c) genes d) membrances
48 ..... is a mass of cells that lack the ability to invade neighboring tissue or metastasize.
a) cancer b) decomposition ***c) benign tumor*** d) swelling
49 .....is the process by which blood changes from a liquid to a gel, forming a blood clot.
a) blood contamination b) blood poisoning c) blood change ***d) blood coagulation***
51 .....is the maximum quantity of oxygen that will combine chemically with the hemoglobin in a unit volume of blood.
a) blood oxygen capacity b) hydrogen c) oxygen d) hemoglobin
52 .....is a resilient and smooth elastic tissue, a rubber-like padding that covers and protects the ends of long bones at the joints.
a) catarrhal b) burn c) bleeding ***d) cartilage***
53 ..... occurs when the blood supply to part of your brain is interrupted or reduced.
a) arterial hyperemia b) atrophy ***c) cerebral stroke*** d) cyanosis
54 ..... is the process by which blood changes from a liquid to a gel, forming a blood clot.
a) clotting b) cortex layer c) brain d) forehead
55 .....is a therapy technique used in physical therapy, where blockage of blood in an area of the body is deliberately made.
a) cerebral stroke ***b) compression ischemia*** c) consciousness d) decompression
56 ..... is an anatomical term for loose connective tissue composed of adipocytes.
a) adipose tissue b) absorption c) adsorption d) evaporation
57 .....is a homodimeric protein enzyme of 86 kilodaltons.
a) alkaline battery b) alkaline c) biliary obstruction ***d) alkaline phosphatese***
58 ..... are steroid acids found predominantly in the bile of mammals and other vertebrates.
a) sulphuric acids ***b) bile acids*** c) uric acids d) acetic acids
59. .....blocks the bile ducts, which carry bile to the small intestine for digestion and waste removal.
a) chylomicron b) citric acid ***c) biliary obstruction*** d) tricarboxylic acid cycle
60 .....is interruption of a chemical pathway owing to one chemical substance inhibiting the effect of another by competing with it for binding or bonding. ***a) competitive inhibition*** b) exudation c) decomposition d) composition
61 .....is a cell that displays antigen complexes with major histocompatibility complexes (MHCs) on their surfaces.
a) accessory cell b) dead cell c) alive cell d) cell
62 ..... is a fruit in which some of the flesh is derived not from the ovary but from some adjacent tissue exterior to the carpel.
a) vegetable b) food ***c) aggregate -accessory fruit*** d) dairy product
63 .....are the most diverse group of land plants.
a) anisocytic b) annual plants c) apical meristem ***d) angiosperms***
64 ..... is a plant collected from the phloem or bast surrounding the stem of certain dicotyledonous plants.

a) fiber ***b) bast fiber*** c) cartilage d) flower
65 ..... is a flowering plant that takes two years to complete its biological lifecycle.
a) annual plant b) flowering plant c) addition root ***d) biennial plant***
66 ..... is a zygomorphic, sympetalous corolla with the limb divided into two lips.
a) bilabiate corolla b) collateral bundle c) collenchyma d) companion cell
67 ..... is a fruit with a large "stone" inside.
a) bundle b) root ***c) stone - fruit*** d) stem
68 .....are a division of vascular land plants containing a single extant class.
a) cutinization b) cystoliths c) buds ***d) conifers***
69 .....is a rounded underground storage organ consisting of a swollen stem base covered with scale leaves.
a) corymb ***b) corm*** c) conifer d) branch
70 .....is a botanical term for an inflorescence with the flowers growing in such a fashion that the outermost are born on longer pedicels.
a) corymb b) corm c) bulb d) root
71 ..... include many types of cancer, particularly those of the bone marrow and blood cells (leukemia, lymphoma, multiple myeloma), and certain chronic infections.
a) acquired immunodeficiencies b) illnesses c) diseases d) disorder
72 .....is a serious infectious disease caused by gram-positive, rod-shaped bacteria known as Bacillus anthracis.
a) hives b) ulcer ***c) anthrax*** d) pollution
73 .....is a medication made up of antibodies against the tetanus.
a) artificial active immunity ***b) antitetanus immunoglobulin*** c) anti - viral drug d) autoclaving
74 ..... causes gastroenteritis, an inflammation of the gastrointestinal tract involving both of the stomach and the small intestine.
a) allergen b) antibiotic ***c) acute intestinal infection*** d) amoebic dysentery
75 .....is a laboratory method to check for certain antibodies or antigens in a variety of body fluids including saliva, urine, cerebrospinal fluid, or blood. a) blood tellurium agar b) bactericidal c) anaerobic wound infection ***d) agglutination test***
76 .....is a disorder of sight due to the eye and brain not working well together.
a) ambiopia b) coli – index c) capsular bacteria d) bismuth sulfite agar
77 .....inhibits the synthesis of mycolic acid, resulting in disruption of the bacterial cell walls.
a) penicillin b) antitetanus immunoglobulin ***c) anti - TB action*** d) blue - green pigment
78 .....are germs. They are different in size and shape.
a) illnesses ***b) bacteria and fungi*** c) disorders d) contamination
79 .....is a type of asexual reproduction in which a new organism develops from an outgrowth or bud due to cell division at one particular site.
a) budding reproduction b) colienteritis c) capsular bacteria d) amoebic dysentery
80 .....is an infection caused by the bacterium Corynebacterium diphtheriae.
a) autoclaving b) allergens c) immunity ***d) causative agent of diphtheria***

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