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**COMMUNICATIVE CULTURE
OF MEDICAL STUDENTS IN USE**

Study guide



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The textbook is designed for 3rd year students majoring in “Medicine”, “Pediatrics” and logically completes the course “Foreign Language” (in the professional field). The study material consists of the main topics, which contain active vocabulary, some theoretical aspects of Anatomy and a set of conditional-communicative and communicative tasks. The main purpose of the manual is to form the students’ communicative competencies, taking into account previously acquired knowledge, skills and abilities and their successful application in further professional activities.

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CONTENTS

	P.
Unit 1. Skeletal-muscular system	5
Unit 2. Skeletal-muscular disorders	8
Unit 3. Immune system	12
Unit 4. Immune diseases	19
Unit 5. AIDS	24
Unit 6. Infectious diseases	28
Unit 7. Infectious diseases 2	30
Unit 8. Digestive system	37
Unit 9. Digestie disorders	40
Unit 10. Respiratory system	42
Unit 11. Respiratory system disorders	49
Unit 12. Urinary system	55
Unit 13. Urine	58
Unit 14. Endocrine System	62
Unit 15. Tissues, Glands and Membranes	69
Unit 16. Diseases of endocrine system	72
Unit 17. Nervous system	76
Unit 18. Pain	79
References	85

ПЕРЕДМОВА

У сучасних умовах глобалізації та використання інформаційно-комунікаційних технологій в освіті, зокрема щодо викладання іноземних мов, визначальною тенденцією є реалізація комунікативного підходу. Цей навчальний посібник створено з урахуванням комплексного підходу до вивчення іноземної мови студентами медичних спеціальностей у немовному ЗВО. Основна мета цього видання – формування комунікативних компетенцій у процесі систематизації та закріплення на практиці знань, умінь та навичок, набутих студентами під час вивчення основного курсу.

Комунікативний метод, обраний як провідний, активізує творчі можливості студентів, позитивно впливає на їх мотивацію та дає можливість користуватися мовою залежно від конкретної професійної ситуації. Відповідно вправи й завдання цього посібника містять комунікативно виправданий дефіцит інформації, вибір та реакцію (information gap, choice, feedback). Використання автентичних матеріалів, реально використовуваних носіями мови, та ситуації медичної практики складають основу цього видання.

Структура навчального посібника побудована таким чином, що студенти спочатку оволодівають видами мовленнєвої діяльності на фразовому і текстовому рівнях за обмеженого використання рідної мови. Завдання передбачають не відображення абсолютно правильних граматичних речень, а акцент, що ставиться на лексичних одиницях, та їх коректне застосування в комунікативних ситуаціях.

Тексти для Reading and Comprehension не потребують детального перекладу. Студенти можуть зрозуміти лише загальну інформацію, яку використовують для вирішення комунікативних ситуацій.

Кінцева мета посібника – задовольнити комунікативні потреби студентів, пов'язані з їх найближчим професійним майбутнім, використовуючи ситуації, близькі до реального життя.

UNIT 1

THE SKELETAL-MUSCULAR SYSTEM

1. Answer the questions.

1. What are the main functions of skeletal system?
2. Name the main groups of muscles.
3. What are ligaments?
4. How does skeleton-muscular system work?

2. Vocabulary.

Read key terms, pay attention to the meaning. Learn them by heart.

Term	Meaning
Musculoskeletal system	The body system that provides support, stability, shape, and movement to the body
Joint	The point at which two (or more) bones meet.
Cartilage	Soft connective tissue found between joints
Ligaments	Connective tissue that attaches bone to bone at a joint
Tendons	Connective tissue that attaches muscle to bone
Voluntary muscle	Muscle that can be consciously controlled
Involuntary muscle	Muscle that is controlled by the autonomic nervous system (not consciously controlled)
Striated muscle	Muscle tissue that has a striped appearance due to its fiber composition

Reading/ Communication.

1. Read the text.

The human musculoskeletal system (also known as the locomotor system, and previously the activity system [5]) is an organ system that gives humans the ability to move using their muscular and skeletal systems. The musculoskeletal system provides form, support, stability, and movement to the body.

It is made up of the bones of the skeleton, muscles, cartilage, tendons, ligaments, joints, and other connective tissue that supports and binds tissues and organs together [18]. The musculoskeletal system's primary functions include supporting the body, allowing motion, and protecting vital organs [16]. The skeletal portion of the system serves as the main storage system for calcium and phosphorus and contains critical components of the hematopoietic system [10].

This system describes how bones are connected to other bones and muscle fibers via connective tissue such as tendons and ligaments. The bones provide stability to the body. Muscles keep bones in place and play a role in the movement of bones. To allow motion, different bones are connected by joints. Cartilage prevents the bone ends from rubbing directly onto each other. Muscles contract to move the bone attached at the joint.

The skeletal system serves as a framework for tissues and organs to attach themselves to. This system acts as a protective structure for vital organs. Major examples of this are the brain being protected by the skull and the lungs being protected by the rib cage.

There are three types of muscles – cardiac, skeletal, and smooth. Smooth muscles are used to control the flow of substances within the lumens of hollow organs and are not consciously controlled. Skeletal and cardiac muscles have striations that are visible under a microscope due to the components within their cells. Only skeletal and smooth muscles are part of the musculoskeletal system and only the skeletal muscles can move the body. Cardiac

muscles are found in the heart and are used only to circulate blood; like the smooth muscles, these muscles are not under conscious control. Skeletal muscles are attached to bones and arranged in opposing groups around joints [1]. Muscles are innervated, to communicate nervous energy to [10] by nerves, which conduct electrical currents from the central nervous system and cause the muscles to contract [12].

Joints are structures that connect individual bones and may allow bones to move against each other to cause movement. There are three divisions of joints, diarthroses which allow extensive mobility between two or more articular heads; amphiarthrosis, which is a joint that allows some movement, and false joints or synarthroses, joints that are immovable, that allow little or no movement and are predominantly fibrous. Synovial joints, joints that are not directly joined, are lubricated by a solution called synovial fluid that is produced by the synovial membranes. This fluid lowers the friction between the articular surfaces and is kept within an articular capsule, binding the joint with its taut tissue [12], [21].

A ligament is a small band of dense, white, fibrous elastic tissue [12], [2]. Ligaments connect the ends of bones together in order to form a joint. Most ligaments limit dislocation or prevent certain movements that may cause breaks. Since they are only elastic they increasingly lengthen when under pressure. When this occurs the ligament may be susceptible to break resulting in an unstable joint.

Ligaments may also restrict some actions: movements such as hyper extension and hyper flexion are restricted by ligaments to an extent. Also ligaments prevent certain directional movement [10], [8].

2. Make up sentences with the following words.

Provide, ligaments, movements, elastic, break, connect, prevent, build, be kept, muscles, mobility, energy.

3. Name all bones and muscles of the body.

Start as in the example: The framework of the body consists of ...

4. Using the following statements explain what can be described.

- It acts as a scaffold by providing support and protection for the soft tissues;
- new blood cells are produced by the red bone marrow;
- there are two main divisions;
- upper limbs, lower limbs and pelvic girdle;
- it is a movable jaw bone and forms the only movable joint in the skull;
- it protects the brain from the damage;
- the smallest bones in the body;
- it is the thin and knife-shaped bone located along the midline of the thoracic region;
- true ribs;
- floating ribs;
- 30 – 40 per cent of adult's body mass.

5. Work in pairs. Imagine the situation.

Student A – you are a doctor and you come to the school to give some explanation about human's skeletal system and how our system of organs connects.

Student B – you are a student of a secondary school. You have meeting with the doctor who will explain you everything about our skeleton, joints and ligaments. Ask questions about the skeletal system, how it works and all functions of it.

UNIT 2 SKELETAL-MUSCULAR DISORDERS

1. Discussion in groups.

1. What can be the main diseases of the skeletal-muscular system?
2. Who is in the group risk?

3. What are the causes of these disorders?
4. How can we improve the health of our bones and joint?
5. Can food influence on our health?

2. Vocabulary. Learn your active words and word combinations:

ache	біль
pain	біль
disorder	порушення, хвороба
backache	спинний біль
broken limb	зламана кінцівка
bruise	синяк
concussion	струс мозку
fracture	перелом
gout	падагра
joint	суглоб
ligament	зв'язка
rheumatism	ревматизм
arthritis	артрит
osteoporosis	остеопороз
osteomalacia	остеомаляція
rickets	рахіт

Reading / communication.

1. Read the text.

Osteoporosis is a disease of the bones that leads to an increased risk of fracture. In osteoporosis, the bone mineral density (BMD) is reduced, bone microarchitecture deteriorates, and the amount and variety of proteins in bone is altered. The three main mechanisms by which osteoporosis develop are an inadequate peak bone mass (the skeleton develops insufficient mass and strength during growth), excessive bone resorption, and inadequate formation of new bone during remodeling. An interplay of these three mechanisms underlies

the development of fragile bone tissue. The form of osteoporosis most common in women after menopause is referred to as primary type 1 or postmenopausal osteoporosis. Primary type 2 osteoporosis or senile osteoporosis occurs after age 75 and is seen in both females and males at a ratio of 2:1. Finally, secondary osteoporosis may arise at any age and affect men and women equally. This form of osteoporosis results from chronic predisposing medical problems or disease, or prolonged use of medications such as glucocorticoids [11].

Paget's disease of bone is a chronic disorder that can result in enlarged and misshapen bones. The excessive breakdown and formation of bone tissue causes affected bone to weaken, resulting in pain, misshapen bones, fractures, and arthritis in the joints near the affected bones. Paget's disease typically is localized, affecting just one or a few bones, as opposed to osteoporosis, for example, which affects all the bones in the body. Although there is no cure for Paget's disease, medications (bisphosphonates and calcitonin) can help control the disorder and lessen pain and other symptoms [11].

Fractures are breaks in bone, usually caused by excessive stress on bone. Fractures heal when osteoblasts form new bone. Soon after a fracture, the body begins to repair the break. The area becomes swollen and sore. Within a few days, bone cells travel to the break site and begin to rebuild the bone. It takes about two to three months before compact and spongy bone form at the break site. Sometimes the body needs extra help in repairing a broken bone. In such a case, a surgeon will piece a broken bone together with metal pins. Moving the broken pieces together will help keep the bone from moving and give the body a chance to repair the break.

Osteoarthritis is a condition in which cartilage breaks down in joints due to wear and tear, causing joint stiffness and pain [11].

2. Answer the questions.

1. What are three main diseases of skeleton?
2. Name the symptoms of these diseases.

3. What is the age of patients?
4. What are fractures?
5. What is the cure for Paget's disease?

3. Tell your groupmate about fractures, kinds of fractures.

4. Imagine situation that you are a doctor. Your patient has got a fracture. Your actions.

5. Imagine situation that you are a lecturer. You must teach students and explain them what the main disease of bones are.

6. Read and translate the abstract.

There is no single type of doctor that treats muscular diseases and disorders. Rheumatologists, orthopedists and neurologists may all treat conditions that affect the muscles, according to the American Medical Association.

There are a number of common neuromuscular disorders, according to Dr. Robert Schabbing, chief of neurology at Kaiser Permanente in Denver. Common primary muscle disorders include inflammatory myopathies, including polymyositis, which is characterized by inflammation and progressive weakening of the skeletal muscles; dermatomyositis, which is polymyositis accompanied by a skin rash; and inclusion body myositis, which is characterized by progressive muscle weakness and wasting. Other common disorders are muscular dystrophies and metabolic muscle disorders, he said. Muscular dystrophy affects muscle fibers. Metabolic muscle disorders interfere with chemical reactions involved in drawing energy from food. Neuromuscular junction disorders impair the transmission of nerve signals to muscles, Schabbing noted. The most common neuromuscular junction disorder is myasthenia gravis, which is characterized by varying degrees of weakness of the skeletal muscles. Schabbing said. "There are many types of peripheral neuropathies that can be secondary to

other medical conditions, such as diabetes, or due to a variety of other causes, including toxins, inflammation and hereditary causes,” he said. Motor neuron disorders affect the nerve cells that supply muscles, Schabbing said. The most recognizable motor neuron disease is amyotrophic lateral sclerosis, or ALS, commonly known as Lou Gehrig's disease [21].

7. Describe the main muscle diseases. Work in pairs.

Use these words and phrases: muscle diseases, muscles, work in order, disorder of joints and bones, a terrible pain, ache of, its hurt, treatment of muscle diseases, you should consult a doctor, doctor’s instructions, do morning exercises.

8. Imagine situation that you are a family doctor.

Give your own a list of advice. You should explain why this problem is dangerous and give all necessary tips how to be healthy.

**UNIT 3
IMMUNITY**

1. Answer the questions.

1. What is the immunity?
2. What kinds of immunity do you know?
3. What is function of the immune system?
4. What is the difference between passive and active immunity?

2. Vocabulary. Work in groups.

What associations do you have with the word “immunity”? Write the list of all words and words combinations.

Reading / communication.

1. Read the text.

IMMUNE SYSTEM

Immunity is the capability of multicellular organisms to resist harmful microorganisms from entering it. Immunity involves both specific and nonspecific components. The nonspecific components act as barriers or eliminators of a wide range of pathogens irrespective of their antigenic make-up. Other components of the immune system adapt themselves to each new disease encountered and can generate pathogen-specific immunity [5].

An immune system may contain innate and adaptive components. The innate system in mammals, for example, is composed of primitive bone marrow cells that are programmed to recognise foreign substances and to react. The adaptive system is composed of more advanced lymphatic cells that are programmed to recognise self-substances and not to react. The reaction to foreign substances is etymologically described as inflammation, meaning to set on fire. The non-reaction to self-substances is described as immunity, meaning to exempt or as immunotolerance. These two components of the immune system create a dynamic biological environment where “health” can be seen as a physical state where the self is immunologically spared, and what is foreign is inflammatorily and immunologically eliminated. “Disease” can arise when what is foreign cannot be eliminated or what is self is not spared.

Innate immunity, also called native immunity, exists by virtue of an organism constitution, that is its genetic make-up, without an external stimulation or a previous infection. It is divided into two types: (a) Non-Specific innate immunity, a degree of resistance to all infections in general. (b) Specific innate immunity, a resistance to a particular kind of microorganism only. As a result, some races, particular individuals or breeds in agriculture do not suffer from certain infectious diseases.

Adaptive immunity can be sub-divided depending on how the immunity was introduced in 'naturally acquired' through chance contact with a disease-causing agent, whereas "artificially acquired immunity" develops through deliberate actions such as vaccination. Both naturally and artificially acquired immunity can be further subdivided depending on whether the host built up immunity itself by antigen as "active immunity" and lasts long-term, sometimes lifelong. "Passive immunity" is acquired through transfer (injection or infusion) of antibodies or activated T-cells from an immune host; it is short lived – usually lasting only a few months.

Adaptive immunity can also be divided by the type of immune mediators involved; humoral immunity is the aspect of immunity that is mediated by secreted antibodies, whereas cell mediated immunity involves T-lymphocytes alone. Humoral immunity is called active when the organism generates its antibodies, and passive when antibodies are transferred between individuals or species. Similarly, cell-mediated immunity is active when the organisms' T-cells are stimulated, and passive when T cells come from another organism [18].

Passive immunity is the transfer of active immunity, in the form of readymade antibodies, from one individual to another. Passive immunity can occur naturally, when maternal antibodies are transferred to the foetus through the placenta, and can also be induced artificially, when high levels of human (or horse) antibodies specific for a pathogen or toxin are transferred to non-immune individuals. Passive immunization is used when there is a high risk of infection and insufficient time for the body to develop its own immune response, or to reduce the symptoms of ongoing or immunosuppressive diseases [8]. Passive immunity provides immediate protection, but the body does not develop memory, therefore the patient is at risk of being infected by the same pathogen later [2].

Maternal passive immunity is a type of naturally acquired passive immunity and refers to antibody-mediated immunity conveyed to a

fetus by its mother during pregnancy. Maternal antibodies (MatAb) are passed through the placenta to the fetus by an FcRn receptor on placental cells. This occurs around the third month of gestation. IgG is the only antibody isotype that can pass through the placenta. Passive immunity is also provided through the transfer of IgA antibodies found in breast milk that are transferred to the gut of the infant, protecting against bacterial infections, until the newborn can synthesize its antibodies. Colostrum present in mother's milk is an example of passive immunity [2].

Artificially acquired passive immunity is a short-term immunization induced by the transfer of antibodies, which can be administered in several forms; as human or animal blood plasma, as pooled human immunoglobulin for intravenous (IVIG) or intramuscular (IG) use, and in the form of monoclonal antibodies (MAb). Passive transfer is used prophylactically in the case of immunodeficiency diseases, such as hypogammaglobulinemia [21]. It is also used in the treatment of several types of acute infection, and to treat poisoning [9]. Immunity derived from passive immunization lasts for only a short period of time, and there is also a potential risk for hypersensitivity reactions, and serum sickness, especially from gamma globulin of non-human origin [2].

The artificial induction of passive immunity has been used for over a century to treat infectious disease, and before the advent of antibiotics, was often the only specific treatment for certain infections. Immunoglobulin therapy continued to be a first line therapy in the treatment of severe respiratory diseases until the 1930s, even after sulfonamide lot antibiotics were introduced [22].

Passive or "adoptive transfer" of cell-mediated immunity, is conferred by the transfer of "sensitized" or activated T-cells from one individual into another. It is rarely used in humans because it requires histocompatible (matched) donors, which are often difficult to find. In unmatched donors this type of transfer carries severe risks of graft versus host disease [8]. It has, however, been used to treat certain diseases including some types of cancer and

immunodeficiency. This type of transfer differs from a bone marrow transplant, in which (undifferentiated) hematopoietic stem cells are transferred [2].

2. Fill in the missing words.

1. An immune system may contain innate and _____ components.
2. The reaction to foreign substances is etymologically described as _____, meaning to set on fire.
3. Innate immunity, also called _____, exists by virtue of an organisms constitution, that is its genetic make-up, without an external stimulation or a previous _____.
4. Adaptive immunity can be sub-divided depending on how the immunity was introduced in “naturally acquired” through chance contact with a _____, whereas “artificially acquired immunity” develops through deliberate actions such as vaccination.
5. Similarly, cell-mediated immunity is active when the organisms’ T-cells are stimulated, and passive when _____ come from another organism.
6. Passive immunity can occur naturally when maternal antibodies are transferred to the _____ through the placenta.
7. Maternal antibodies (MatAb) are passed through the placenta to the fetus by an FcRn receptor on _____ cells.
8. Artificially acquired passive immunity is a short-term _____ induced by the transfer of antibodies, which can be administered in several forms.
9. The artificial induction of passive immunity has been used for over a century to _____ infectious disease.
10. Passive or “adoptive transfer” of cell-mediated immunity, is conferred by the transfer of "sensitized" or activated _____ from one individual into another.

3. Translate the words.

Bone marrow, adoptive transfer, severe risks, host, acute infection, foreign substances, foreign substances, to exempt, inflammation, a bone marrow transplant, immunodeficiency, chance contact.

4. Work in groups.

There is a case-history. Divide into 3 groups. Discuss and analyze the facts which are mentioned.

BOSTON – Autism spectrum disorders affect one in 59 American children by age eight. With no known quantitative biological features, autism diagnoses are currently based on expert assessments of behavioral symptoms, including impaired social skills and communication, repetitive behaviors and restricted interests. In a paper published in *Annals of Neurology*, Matthew P. Anderson, MD, PhD, a physician-scientist at Beth Israel Deaconess Medical Center (BIDMC), and colleagues report the presence of cellular features consistent with an immune response targeting specialized brain cells in more than two thirds of autistic brains analyzed postmortem. These cellular characteristics – not previously observed in autism – lend critical new insight into autism’s origins and could pave the way to improved diagnosis and treatment for people with this disorder. “While further research is needed, determining the neuropathology of autism is an important first step to understanding both its causes and potential treatment,” said Anderson, who is Chief of Neuropathology in the Department of Pathology at BIDMC and an Associate Professor of Pathology at Harvard Medical School. “Investigators typically aim potential treatments at specific pathologies in brain diseases, such as the tangles and plaques that characterize Alzheimer’s disease and the Lewy bodies seen in Parkinson’s. Until now, we have not had a promising target like that in autism.” Anderson was examining brains donated to Autism BrainNet, a non-profit tissue bank, when he noticed the presence of perivascular lymphocyte cuffs – an accumulation of immune cells surrounding

blood vessels in the brain. He also noted mysterious bubbles or blisters that scientists call blebs accumulating around these cuffed blood vessels. Anderson and colleagues subsequently found these blebs contained debris from a subset of brain cells called astrocytes. Not previously linked to autism, perivascular lymphocyte cuffing is a well-known indicator of chronic inflammation in the brain. Lymphocyte cuffs in the brain are telltale signs of viral infections or autoimmune disorders. But the pattern Anderson observed did not match any previously documented infection or autoimmune disorder of the brain. In the brains Anderson examined, the cuffs were subtle but distinct. “I’ve seen enough brains to know you shouldn’t see that,” he said. To find out if the perivascular lymphocyte cuffs in this sample of autistic brains were linked to autism spectrum disorder, Anderson and colleagues compared 25 brains from donors diagnosed with the disorder to 30 brains from neurotypical brain donors. These neurotypical control cases were selected to approximate the age range and medical histories of the autism group. Present in more than two-thirds of the autistic brains, perivascular lymphocyte cuffing significantly surpassed that in the control cases. In a second set of experiments, Anderson’s team determined that the perivascular cuffs were made up of killer T-cells, a subset of immune cells responsible for attacking and killing damaged, infected or cancerous cells or normal cells in autoimmune diseases. With no apparent evidence of viruses known to infect the brain, the presence of these tissue-attacking immune cells throughout the autistic brains suggested one of two scenarios, explained Anderson. Either the T-cells are reacting normally to a pathogen such as a virus, or they are reacting abnormally to normal tissue – the definition of an autoimmune disorder. “With this new research, we haven’t proved causality, but this is one clue in support of the idea that autism might be an autoimmune disorder, just like multiple sclerosis is thought to be,” said Anderson. In future research, Anderson and colleagues will work to develop a genetically-engineered animal model of this T-lymphocyte cuffing neuropathology in which to conduct studies to

determine mechanism as well as cause and effect. The team also plans to search for biomarkers – a measurable diagnostic signature in patients’ urine or blood or other tissues – that may be used to identify these newly-documented cellular features in living patients. In turn, these biomarkers could one day assist clinicians in the diagnosis and long-term care of people with autism [10].

5. Work in pairs. Imagine the situation that you are a journalist. You have to make an interview about main tips how to be healthy. Make the list of questions. Use such phrases.

- Good morning!
- I am a journalist of regional newspaper.
- We make a column about immunity.
- Can immunity influence on our health?
- Is immunity an important factor in human’s life?
- What is immunity?
- What should every person know about HIV?
- Is AIDS and HIV the same?
- What must we know about our immune system?
- What is immune response?
- What is active immunity?
- What is passive immunity?
- What should we know about vaccination?

UNIT 4

IMMUNE DISEASES

1. Ask and answer the questions with a partner.

1. What symptoms of immune diseases do you know?
2. What could you recommend to improve your immunity?

2. Vocabulary. Read and translate the words.

Autoimmune disease, diabetes I type, foreign cells, antibodies, disease target, inflammation, RA, Grave's disease, swelling, hair loss, skin rash.

Reading / Communication.

1. Read and translate the text.

An autoimmune disease is a condition in which your immune system mistakenly attacks your body. The immune system normally guards against germs like bacteria and viruses. When it senses these foreign invaders, it sends out an army of fighter cells to attack them. Normally, the immune system can tell the difference between foreign cells and your own cells. In an autoimmune disease, the immune system mistakes part of your body, like your joints or skin, as foreign. It releases proteins called autoantibodies that attack healthy cells. Some autoimmune diseases target only one organ. Type 1 diabetes damages the pancreas. Other diseases, like systemic lupus erythematosus (SLE), affect the whole body.

1. Type 1 diabetes

The pancreas produces the hormone insulin, which helps regulate blood sugar levels. In type 1 diabetes mellitus, the immune system attacks and destroys insulin-producing cells in the pancreas. High blood sugar results can lead to damage in the blood vessels, as well as organs like the heart, kidneys, eyes, and nerves.

2. Rheumatoid arthritis (RA)

In rheumatoid arthritis (RA), the immune system attacks the joints. This attack causes redness, warmth, soreness, and stiffness in the joints. Unlike osteoarthritis, which commonly affects people as they get older, RA can start as early as your 30s or sooner.

3. Psoriasis/psoriatic arthritis

Skin cells normally grow and then shed when they're no longer needed. Psoriasis causes skin cells to multiply too quickly. The extra cells build up and form inflamed red patches, commonly

with silver-white scales of plaque on the skin. Up to 30 percent of people with psoriasis also develop swelling, stiffness, and pain in their joints. This form of the disease is called psoriatic arthritis.

4. Multiple sclerosis

Multiple sclerosis (MS) damages the myelin sheath, the protective coating that surrounds nerve cells, in your central nervous system. Damage to the myelin sheath slows the transmission speed of messages between your brain and spinal cord to and from the rest of your body. This damage can lead to symptoms like numbness, weakness, balance issues, and trouble walking. The disease comes in several forms that progress at different rates. According to a 2012 study Trusted Source, about 50 percent of people with MS need help walking within 15 years after the disease starts.

5. Systemic lupus erythematosus (SLE)

Although doctors in the 1800s first described lupus as a skin disease because of the rash it commonly produces, the systemic form, which is most the common, actually affects many organs, including the joints, kidneys, brain, and heart.

Joint pain, fatigue, and rashes are among the most common symptoms.

6. Inflammatory bowel disease

Inflammatory bowel disease (IBD) is a term used to describe conditions that cause inflammation in the lining of the intestinal wall. Each type of IBD affects a different part of the GI tract.

- Crohn's disease can inflame any part of the GI tract, from the mouth to the anus.

- Ulcerative colitis affects only the lining of the large intestine (colon) and rectum.

7. Addison's disease

Addison's disease affects the adrenal glands, which produce the hormones cortisol and aldosterone as well as androgen hormones. Having too little of cortisol can affect the way the body uses and stores carbohydrates and sugar (glucose). Deficiency of aldosterone will lead to sodium loss and excess potassium in the bloodstream.

Symptoms include weakness, fatigue, weight loss, and low blood sugar.

8. Graves' disease

Graves' disease attacks the thyroid gland in the neck, causing it to produce too much of its hormones. Thyroid hormones control the body's energy usage, known as metabolism. Having too much of these hormones revs up your body's activities, causing symptoms like nervousness, a fast heartbeat, heat intolerance, and weight loss. One potential symptom of this disease is bulging eyes, called exophthalmos. It can occur as a part of what is called Graves' ophthalmopathy, which occurs in around 30 percent of those who have Graves' disease, according to a 1993 study^{Trusted Source}.

9. Sjogren's syndrome

This condition attacks the glands that provide lubrication to the eyes and mouth. The hallmark symptoms of this syndrome are dry eyes and dry mouth, but it may also affect the joints or skin.

10. Hashimoto's thyroiditis

In Hashimoto's thyroiditis, thyroid hormone production slows to a deficiency. Symptoms include weight gain, sensitivity to cold, fatigue, hair loss, and swelling of the thyroid (goiter).

11. Myasthenia gravis

Myasthenia gravis affects nerve impulses that help the brain control the muscles. When the communication from nerves to muscles is impaired, signals can't direct the muscles to contract. The most common symptom is muscle weakness that gets worse with activity and improves with rest. Often muscles that control eye movements, eyelid opening, swallowing, and facial movements are involved.

12. Autoimmune vasculitis

Autoimmune vasculitis happens when the immune system attacks blood vessels. The inflammation that results narrows the arteries and veins, allowing less blood to flow through them.

13. Pernicious anemia

This condition causes deficiency of a protein, made by stomach lining cells, known as intrinsic factor that is needed in order for the small intestine to absorb vitamin B-12 from food. Without enough of this vitamin, one will develop an anemia, and the body's ability for proper DNA synthesis will be altered. Pernicious anemia is more common in older adults. According to a 2012 study, it affects 0.1 percent of people in general, but nearly 2 percent of people over age 60.

14. Celiac disease

People with celiac disease can't eat foods containing gluten, a protein found in wheat, rye, and other grain products. When gluten is in the small intestine, the immune system attacks this part of the gastrointestinal tract and causes inflammation. A 2015 study Trusted Source noted that celiac disease affects about 1 percent of people in the United States. A larger number of people have reported gluten sensitivity, which isn't an autoimmune disease, but can have similar symptoms like diarrhea and abdominal pain [1,10, 12, 11].

2. Make up a plan to the text.

3. Answer the questions.

1. What is celiac disease?
2. What does cause deficiency of a protein?
3. When does autoimmune vasculitis happen?
4. What does include weight gain, sensitivity to cold, fatigue, hair loss, and swelling of the thyroid (goiter) ?
5. What does myasthenia gravis affect?
6. What will deficiency of aldosterone lead to?
7. What is Addison's disease?
8. What does attack the thyroid gland?
9. What does help to regulate blood sugar levels?
9. IBD is?
10. When did doctors first describe lupus?
11. RA is?

12. What does attack the joints?
13. What does multiple sclerosis damage?
14. What do thyroid hormones control?
15. What do symptoms include weakness, fatigue, weight loss, and low blood sugar?
16. What disease can inflame any part of the GI tract?
17. Are joint pain, fatigue, and rashes among the most common symptoms of diabetes?
18. Who can not eat food with gluten?

4. Make a list of symptoms which are characterized for patients with immune diseases.

5. Imagine the situation that you have to make a speech about immunity and immune system. Your speech will be on TV in the morning programs. Be very attentive and say about the most usual diseases.

6. Work in pairs. Discuss with your groupmates preventive methods for immune diseases.

UNIT 5

AIDS

1. Translate the words:

AIDS, stands for, acquired immune deficiency syndrome, called, advanced, HIV infection, late-stage HIV, a set of, symptoms, illnesses, develop, advanced, HIV, infection, destroy, treatment, mean, inject drugs, use, a clean needle, syringe, share, equipment, a long and healthy life, antiretroviral treatment, effective and available to all.

2. Vocabulary

Write a list of word-combinations which you associate with word AIDS.

Reading / Communication.

1. Write the statements about AIDS. Give it to your groupmate. Discuss in pairs.

2. Read the text and try to understand the main idea.

HIV is a virus that attacks cells in the immune system, which is our body's natural defence against illness. The virus destroys a type of white blood cell in the immune system called a T-helper cell, and makes copies of itself inside these cells. T-helper cells are also referred to as CD4 cells. As HIV destroys more CD4 cells and makes more copies of itself, it gradually weakens a person's immune system. This means that someone who has HIV, and isn't taking antiretroviral treatment, will find it harder and harder to fight off infections and diseases. If HIV is left untreated, it may take up to 10 or 15 years for the immune system to be so severely damaged that it can no longer defend itself at all. However, the rate at which HIV progresses varies depending on age, general health and background.

HIV stands for human immunodeficiency virus.

People with HIV can enjoy a long and healthy life by taking antiretroviral treatment which is effective and available to all.

Once a person has HIV, the earlier they are diagnosed, the sooner they can start treatment which means they will enjoy better health in the long term.

It's possible for antiretroviral treatment to reduce the level of HIV in the body to such low levels that blood tests cannot detect it. People living with HIV whose viral load is confirmed as undetectable cannot pass on HIV.

Regular testing for HIV is important to know your status.

HIV is found in semen, blood, vaginal and anal fluids, and breastmilk.

HIV can't be transmitted through sweat, saliva or urine.

Using external (or male) condoms or internal (or female) condoms during sex is the best way to prevent HIV and other sexually transmitted infections.

If you inject drugs, always use a clean needle and syringe, and never share equipment.

If you're pregnant and living with HIV, the virus in your blood could pass into your baby's body, during birth or afterwards through breastfeeding. Taking HIV treatment and becoming undetectable eliminates this risk.

AIDS is a set of symptoms (or syndrome as opposed to a virus) caused by HIV. A person is said to have AIDS when their immune system is too weak to fight off infection, and they develop certain defining symptoms and illnesses. This is the last stage of HIV, when the infection is very advanced, and if left untreated will lead to death.

Basic facts about AIDS

AIDS stands for acquired immune deficiency syndrome; it's also called advanced HIV infection or late-stage HIV.

AIDS is a set of symptoms and illnesses that develop as a result of advanced HIV infection which has destroyed the immune system.

Fewer people develop AIDS now because treatment for HIV means that more people are staying well.

Although there is no cure for HIV, with the right treatment and support, people living with HIV can enjoy long and healthy lives. To do this, it's especially important to commit to taking treatment correctly [11, 24].

3. Fill in the missing words.

1. However, the rate at which HIV _____ varies depending on age, general health and background.

2. HIV is a virus that attacks cells in the _____ system, which is our body's natural defence against illness.

3. As HIV destroys more CD4 cells and _____ more copies of itself, it gradually weakens a person's immune system.

4. This means that someone who has HIV, and isn't taking antiretroviral treatment, will find it harder and harder to _____ off infections and diseases.

5. If HIV is left untreated, it may take up to 10 or 15 years for the immune system to be so severely damaged that it can no longer _____ itself at all.

6. However, the rate at which HIV _____ varies depending on age, general health and background.

7. HIV _____ human immunodeficiency virus.

8. People with HIV can enjoy a long and healthy life by taking _____ treatment which is effective and available to all.

9. Once a person has HIV, the earlier they are diagnosed, the sooner they can start treatment which means they will _____ better health in the long term.

10. It's possible for antiretroviral treatment to _____ the level of HIV in the body to such low levels that blood tests cannot detect it. People living with HIV whose viral load is confirmed as undetectable cannot pass on HIV.

11. Regular testing for HIV is important to _____ your status.

12. HIV is found in semen, blood, vaginal and anal fluids, and _____.

13. AIDS stands for acquired immune deficiency _____; it's also called advanced HIV infection or late-stage HIV.

14. AIDS is a set of symptoms and _____ that develop as a result of advanced HIV infection which has destroyed the immune system.

15. Fewer people develop AIDS now _____ treatment for HIV means that more people are staying well.

16. Although there is no _____ for HIV, with the right treatment and support, people living with HIV can enjoy long and healthy lives.

4. You have a lesson at school. You must prepare for lecture with teenagers about HIV and AIDS.

5. Imagine situation. You work at newspaper's office. You want to make an article. Make a list of facts which should know every person about HIV and AIDS.

UNIT 6 INFECTIOUS DISEASES

1. Ask and answer the questions with a partner.

1. What are the main symptoms of infectious diseases?
2. Have you ever suffered from infectious diseases?
3. What symptoms do you have if you are not well?

2. Vocabulary.

Write all words and words combination which are connected with infectious diseases.

Reading / Communication.

1. Read and translate the abstract.

Infection is the invasion of an organism's body tissues by disease-causing agents, their multiplication, and the reaction of host tissues to the infectious agents and the toxins they produce [20,4]. Infectious disease, also known as transmissible disease or communicable disease, is illness resulting from an infection. Infections are caused by infectious agents (pathogens) including:

viruses and related agents such as viroids and prions.

Fungi, further subclassified into:

- ascomycota, including yeasts such as *Candida*, filamentous fungi such as *Aspergillus*, *Pneumocystis* species, and dermatophytes, a group of organisms causing infection of skin and other superficial structures in human [20].

Parasites, which are usually divided into [3]:

- unicellular organisms (e.g. malaria, *Toxoplasma*, *Babesia*)
- macroparasites [17] (worms or helminths) including nematodes such as parasitic roundworms and pinworms, tapeworms (cestodes), and flukes (trematodes, such as schistosomiasis).

Arthropods such as ticks, mites, fleas, and lice, can also cause human disease, which conceptually are similar to infections, but invasion of a human or animal body by these macroparasites is usually termed infestation. (Diseases caused by helminths, which are also macroparasites, are sometimes termed infestations as well, but are sometimes called infections.)

Hosts can fight infections using their immune system. Mammalian hosts react to infections with an innate response, often involving inflammation, followed by an adaptive response.

Specific medications used to treat infections include antibiotics, antivirals, antifungals, antiprotozoals, and antihelminthics. Infectious diseases resulted in 9.2 million deaths in 2013 (about 17% of all deaths) [17]. The branch of medicine that focuses on infections is referred to as infectious disease [3].

2. Answer the questions:

1. What is infection?
2. What infectious diseases do you know?
3. How can infection influence on immunity?
4. Can hosts fight infections?
5. What is the impact of antibiotics on human body?
6. What medications are used to treat infections?
7. What branch of medicine does focus on infections?

8. How parasites are divided into?
9. What are arthropods?
10. What are dermathophytes?
11. What is basidiomycota?
12. How can mammalian host react?
13. What flukes can you name?

3. Explain what is infestations?

4. Explain how antibiotics can influence on infections?

5. Speak about the most dangerous infectious diseases.

6. Work in groups. Think about different infectious diseases. Make a list of symptoms.

UNIT 7 INFECTIOUS DISEASES 2

1. Ask and answer the questions with a partner.

1. What do you know about flu?
2. What are the main symptoms?
3. What is the treatment of flu?

2. Vocabulary.

Read and translate the following words and word combinations.

Flu, spread, severity, occur, seasonal, affect, cough, sneeze, droplets, breathe, contain, sore throat, runny nose, nausea, vomiting, muscle, ache, onset, headache, rapid.

Reading / Communication.

1. Read the texts, translate the words.

Flu (seasonal) – including symptoms, treatment and prevention.

Influenza, commonly known as the flu, is a highly infectious viral illness caused by influenza A or B viruses. It affects the nose and throat and may also affect the lungs.

In Australia, seasonal flu of varying severity occurs every year, usually between May and September.

How influenza is spread

The flu virus is spread when an infected person talks, coughs or sneezes small droplets that contain the virus into the air where they may be breathed in by people nearby. Infection may also be spread by contact with hands, tissues and other infected articles.

Signs and symptoms

Symptoms include:

- rapid onset of fever;
- headache;
- muscle aches;
- fatigue;
- sneezing;
- runny nose;
- sore throat;
- cough;
- nausea, vomiting and diarrhoea in children [20].

Most people recover within a week, although the cough and fatigue may last longer. Flu is much more serious than the common cold. It can lead to pneumonia (lung infection or inflammation) and other complications, and even death, particularly in:

- people aged 65 years and over;
- pregnant women;
- young children;

- people with chronic conditions like heart disease, diabetes and lung disease.

Influenza and pregnancy

Pregnant women are more likely to have severe complications from the flu, especially in the second and third trimesters. While the flu virus does not cross the placenta and infect the baby while in the uterus, the high fever and any chest complications caused by flu can be potentially harmful to the baby. Because of these risks, a doctor may recommend antiviral medication for pregnant women with the flu.

There is no evidence that the antiviral medications used in Australia to treat flu are associated with adverse effects in pregnancy. Similarly, women may continue to breastfeed while taking antiviral medication. The best protection for the mother and baby is for the pregnant mother to have the flu vaccine, which is safe and funded at any stage of pregnancy.

Diagnosis

Not all people with symptoms need to be tested for flu. The diagnosis may be suspected on clinical symptoms and examination (especially during the flu season) and may be confirmed by laboratory testing of mucus from the back of the nose or throat.

Incubation period

(time between becoming infected and developing symptoms)
Incubation is 1 - 4 days (average of 2 days).

Infectious period

(time during which an infected person can infect others)
Usually from 1 day before onset of symptoms until 7 days after the onset of symptoms. After 5 days the level of infectiousness is probably very low, however some people, especially children and people with weakened immune systems, might be able to infect others for a longer time [4].

Treatment

Most people recover with rest, drinking plenty of fluids and use of paracetamol for the relief of pain and fever. Aspirin should not

be given to children under 12 years of age unless specifically recommended by a doctor.

People with moderate or severe illness, pregnant women, Aboriginal and Torres Strait Islander people and those with chronic medical conditions may benefit from specific antiviral medication. This can reduce duration of symptoms by about 1 day and prevent some of the more serious complications of flu, but is only effective if commenced within 48 hours of illness onset.

Antiviral therapy may sometimes be used to prevent infection in close contacts of people with flu, such as vulnerable household contacts. A contact is any person who has been close enough to an infected person to be at risk of infection themselves.

When to seek medical advice

Seek medical advice if:

- shortness of breath or difficulty breathing
- confusion;
- symptoms are getting worse;
- you are concerned about the symptoms;
- children are unable to keep fluids down because of vomiting;
- children show signs of dehydration (dizzy on standing, passing less urine than usual).

Prevention

Flu vaccines reduce the risk of getting severe influenza. Annual flu vaccination is strongly recommended for anyone 6 months of age and older and should be actively promoted for people at increased risk of complications.

Cover a cough or sneeze with a tissue or your arm, not with your hand. Drop used tissues immediately into a rubbish bin, then wash your hands.

Wash hands as soon as possible after sneezing or coughing and after contact with nose and throat discharges or articles soiled by these. Use soap and water or an alcohol based hand rub.

Wipe down all frequently touched surfaces regularly with a cleaning cloth dampened with detergent, or a large alcohol wipe [3].

Botulism is an illness caused by botulinum toxin or other similar toxins. Botulinum toxin is made by *Clostridium botulinum* bacteria and some other similar bacteria. The bacteria are widespread in the environment as spores. Spores are dormant forms of bacteria which are resistant to heat and drying. Under specific conditions, the spores of the bacteria germinate and make toxin.

Botulism may occur in several ways:

Foodborne botulism may result from eating food contaminated with the toxin. This may be from poorly processed canned or bottled low acid foods, fermented foods or lightly preserved foods.

Infant botulism results from the germination of ingested spores (for example, from honey or soil) inside the bowels of infants.

Intestinal botulism results from the germination of ingested spores inside the bowels of people with altered bowel bacteria.

Wound botulism results from spore contamination of dirty wounds or in illicit injecting drug use (see image).

Iatrogenic botulism may occur due to accidental injection into the blood stream of commercial botulinum toxin (for example, Botox, Dysport or Xeomin).

Inhalational botulism does not occur naturally but would result from breathing in toxin used as a biological weapon.

Image courtesy Public Health Image Library (PHIL), Department of Health and Human Services, Centers for Disease Control and Prevention (CDC-USA) [20].

Signs and symptoms

Symptoms may include:

- fatigue
- weakness
- vertigo (dizziness)
- blurred vision
- dry mouth
- difficulty swallowing
- difficulty speaking

- paralysis of the muscles which move the eyes
- drooping eyelids
- paralysis [20].

One to ten percent of persons with botulism die as a result.

Foodborne

As well as the symptoms listed above, symptoms of foodborne botulism may include:

- nausea;
- vomiting;
- diarrhoea;
- abdominal cramping;

Infants

In infants the following symptoms may occur:

- constipation
- poor suck;
- altered cry;
- weakness;
- poor head control.

Diagnosis

The diagnosis is made from the history and signs and symptoms of infection (clinical features).

Diagnosis can be confirmed by detection of toxin in clinical specimens such as faeces or blood.

In foodborne botulism, toxin may be detected in the contaminated food item [20].

Incubation period

(time between becoming infected and developing symptoms)

Foodborne botulism: usually 12 to 36 hours, but sometimes several days. Infant botulism: unknown. Intestinal botulism: unknown.

Wound botulism: up to 14 days. Inhalational botulism: probably between 12 hours and 3 days.

Infectious period

(time during which an infected person can infect others)

Botulism is not spread from person to person.

Treatment

An anti-toxin is available. In infant botulism, botulism immune globulin can be used (BabyBIG). In non-fatal cases, recovery may be prolonged.

Prevention

Exclusion from childcare, preschool, school and work is not necessary.

Foodborne botulism:

- ensure safe home and commercial canning and bottling;
- using good quality and fresh produce;
- ensuring foods are sufficiently acidic either naturally or by addition of acid (for example, lemon juice, citric acid or vinegar);
- ensuring foods are properly heat processed;
- using appropriate equipment;
- ensure proper processes in the making of fermented foods;
- follow the manufacturer's instructions for food storage and shelf life;
- avoid consuming foods from damaged cans or bottles;
- keep cold food below 5°C and hot food above 60°C.

Infant botulism

- avoid feeding honey to infants less than 12 months of age.

Wound botulism

- clean thoroughly any dirty wounds and seek medical care
- avoid illicit injecting drug use

Iatrogenic botulism

- use only licenced products and follow the manufacturer's instructions [17].

2. Name 10 facts about bird flu.

3. Write the main symptoms of botulism.

4. Name what is the main reason of botulism.

5. How can we prevent from botulism.

6. What are the main tips against botulism?

7. Imagine the situation. You need to write preventive methods against bird flu.

8. Work in pairs.

One student is a family doctor. The second one is a patient. Act out the situation when the patient needs the help and some recommendations against infectious diseases.

UNIT 8 THE DIGESTIVE SYSTEM

**1. Read the proverb. Analyze it. Give your own explanation:
“A HEALTHY MIND IN A HEALTHY BODY”.**

2. Vocabulary

Read and translate the words.

Digestive system, gastrointestinal tract, GI tract, liver, pancreas, gallbladder, hollow organs, twisting tube, anus, mouth, esophagus, stomach, small intestine, large intestine, pancreas, solid organs, duodenum, jejunum, ileum, appendix, cecum, colon, rectum, appendix, finger-shaped pouch, cecum.

Reading / Communication.

1. Read and translate the text.

The digestive system is made up of the gastrointestinal tract – also called the GI tract or digestive tract – and the liver, pancreas, and gallbladder. The GI tract is a series of hollow organs joined in a long, twisting tube from the mouth to the anus.

The hollow organs that make up the GI tract are the mouth, esophagus, stomach, small intestine, large intestine, and anus. The liver, pancreas, and gallbladder are the solid organs of the digestive system.

The small intestine has three parts. The first part is called the duodenum. The jejunum is in the middle and the ileum is at the end. The large intestine includes the appendix, cecum, colon, and rectum. The appendix is a finger-shaped pouch attached to the cecum. The cecum is the first part of the large intestine.

The colon is next. The rectum is the end of the large intestine. Digestion is important because your body needs nutrients from food and drink to work properly and stay healthy.

Proteins, fats, carbohydrates, vitamins [NIH external link](#), minerals [NIH external link](#), and water are nutrients. Your digestive system breaks nutrients into parts small enough for your body to absorb and use for energy, growth, and cell repair:

- proteins break into amino acids;
- fats break into fatty acids and glycerol;
- carbohydrates break into simple sugars.

Each part of your digestive system helps to move food and liquid through your GI tract, break food and liquid into smaller parts, or both. Once foods are broken into small enough parts, your body can absorb and move the nutrients to where they are needed. Your large intestine absorbs water, and the waste products of digestion become stool. Nerves and hormones help control the digestive process [3].

The digestive process

Organ	Movement
Mouth	Chewing
Esophagus	Peristalsis
Stomach	Upper muscle in stomach relaxes to let food enter, and lower muscle mixes food with digestive juice

Organ	Movement
Small intestine	Peristalsis
Pancreas	None
Liver	None
Large intestine	Peristalsis

How does food move through my GI tract?

Food moves through your GI tract by a process called peristalsis. The large, hollow organs of your GI tract contain a layer of muscle that enables their walls to move. The movement pushes food and liquid through your GI tract and mixes the contents within each organ. The muscle behind the food contracts and squeezes the food forward, while the muscle in front of the food relaxes to allow the food to move [3].

2. Name the main organs of digestive system.

3. Answer the questions.

1. What is the function of digestive system?
2. How does food move through GI tract?
3. How does digestive system work?
4. What does GI tract contain?

4. Make a scheme of digestive system organs. Explain how system works and how food is digested.

5. Make a healthy dietary for patients who have problems with digestive system.

UNIT 9

DIGESTIVE DISORDERS

1. Ask and answer the questions.

1. What diseases are the most dangerous for people with weak immunity?
2. What do you know about heartburn?
3. What is yellowish?

Reading / Communication.

1. Read and translate the text

Gastroesophageal Reflux Disease (GERD) –Severe “heartburn” in laymen’s language. Weakness of the valve between the esophagus and stomach may allow stomach acid to reflux (regurgitate, backup) into the esophagus and irritate and inflame the lining. This results in chest pain which can mimic that of angina (pain of cardiac ischemia or an MI).

Jaundice – Literally means “yellow” in French. Yellowing of the skin and whites of the eyes from a backup of bile metabolic by-products from the blood into body tissues. May result from blockage of the ducts draining bile from the liver into the intestines or excessive breakdown of red blood cells. Hemoglobin from destroyed RBCs is broken down, and in part, ends up in bile secretions.

Diverticulosis/diverticulitis – Small pouches may form along the walls of the large intestine called diverticuli which if symptomatic, causing discomfort to the patient, is called diverticulosis. These abnormal outpocketings may collect and not be able to empty fecal material which can lead to inflammation, diverticulitis.

Cirrhosis – Literally, “orange-yellow” in Greek. A degenerative disease of the liver that often develops in chronic alcoholics, but can have other causes. The name refers to the gross appearance of the organ.

Portal hypertension – A potential complication of chronic alcoholism resulting in liver damage and obstruction of venous blood flow through the liver. The rising blood pressure in the veins between the gastrointestinal tract and liver causes engorgement of veins around the umbilicus (navel). The characteristic radiating pattern of veins is called a “caput medusae” (head of Medusa). Medusa was the “snake-haired lady” in Greek mythology.

Esophageal varices – bulging, engorged veins in the walls of the esophagus are often a complication of chronic alcoholism (see portal hypertension). The thin-walled, swollen veins are at risk of tearing resulting in severe, possibly fatal, bleeding.

Dysphagia – Difficulty swallowing. May be related to GERD (see above), esophageal tumor or other causes.

Crohn’s Disease – a chronic inflammatory disease primarily of the bowel. Typical symptoms are abdominal pain, weight loss, diarrhea. There may also be rectal bleeding that can lead to anemia. Special X-rays and tests are needed to differentiate Crohn’s from other diseases with similar symptoms.

Peritonitis – Inflammation of the lining of the abdominal cavity. Before antibiotics, people would die from peritonitis if an inflamed appendix burst. Indications of peritonitis are called “peritoneal signs”: tender abdomen, rebound pain (pain when manual pressure released from examining abdomen), board-like rigidity of abdominal muscles, no bowel sounds (gurgles). The peritoneal membrane is very sensitive to exposure to foreign substances. Contact with blood, bile, urine, pus will cause peritoneal signs [20].

2. Speak about digestive diseases.

3. Give a list of advice how to prevent digestive diseases.

4. Imagine the situation that you will be a gastroenterologist. Speak about your profession.

UNIT 10

THE RESPIRATORY SYSTEM

1. Ask and answer the questions with a partner.

1. Do you know how many times a day you breathe?
2. What organs does respiratory system include?
3. What types of breathing do you know?
4. Do humans and animals have similar respiratory system?

2. Vocabulary. Learn your active words:

alveolus	альвеола
bronchiole	бронхіола
bronchus	бронх
diaphragm	діафрагма
larynx	гортань
lung	легеня
mediastinum	середостіння
pharynx	глотка
pleura	плевра
respiration, breathing	дихання
trachea	трахея
ventilation	вентиляція
nasal cavity	носова порожнина
inhalation	вдих
exhalation	видих
lobe	частка
oxygen	кисень
carbon dioxide	вуглекислий газ
bronchial tree	бронхіальне дерево

Reading/ communication.

1. Read the text.

THE HUMAN RESPIRATORY SYSTEM

This system includes the lungs, pathways connecting them to the outside environment, and structures in the chest involved with moving air in and out of the lungs.

Air enters the body through the nose, is warmed, filtered, and passed through the nasal cavity. Air passes the pharynx (which has the epiglottis that prevents food from entering the trachea). The upper part of the trachea contains the larynx. The vocal cords are two bands of tissue that extend across the opening of the larynx. After passing the larynx, the air moves into the bronchi that carry air in and out of the lungs.

Bronchi are reinforced to prevent their collapse and are lined with ciliated epithelium and mucus-producing cells. Bronchi branch into smaller and smaller tubes known as bronchioles. Bronchioles terminate in grape-like sac clusters known as alveoli. Alveoli are surrounded by a network of thin-walled capillaries. Only about 0.2 μm separate the alveoli from the capillaries due to the extremely thin walls of both structures.

The lungs are large, lobed, paired organs in the chest (also known as the thoracic cavity). Thin sheets of epithelium (pleura) separate the inside of the chest cavity from the outer surface of the lungs. The bottom of the thoracic cavity is formed by the diaphragm.

Ventilation is the mechanics of breathing in and out. When you inhale, muscles in the chest wall contract, lifting the ribs and pulling them, outward. The diaphragm at this time moves downward enlarging the chest cavity. Reduced air pressure in the lungs causes air to enter the lungs. Exhaling reverses these steps.

Muscular contraction and relaxation controls the rate of expansion and constriction of the lungs. These muscles are stimulated by nerves that carry messages from the part of the brain that controls breathing, the medulla. Two systems control breathing:

an automatic response and a voluntary response. Both are involved in holding your breath.

The diaphragm's job is to help pump the carbon dioxide out of the lungs and pull the oxygen into the lungs. The diaphragm is a sheet of muscles that lies across the bottom of the chest cavity. As the diaphragm contracts and relaxes, breathing takes place. When the diaphragm contracts, oxygen is pulled into the lungs. When the diaphragm relaxes, carbon dioxide is pumped out of the lungs.

The lungs, airways, diaphragm, windpipe, throat, mouth, and nasal passages are all part of the respiratory system. Respiration is the process of breathing in and out through this system. Smoking and air pollution are two common causes of respiratory problems.

Oxygen is taken into the body through the airways, absorbed into the lungs, then transported through the body in the blood. The lungs also give out carbon dioxide into the atmosphere.

2. Make up questions to the text.

3. Read the text and add some information connected with respiratory system disorders.

You probably don't think very much about your respiratory system, but it is essential for life. Every once in a while a cough, sneeze, or hiccup will remind you about this body system. A cough is the way your system clears the airway. A sneeze is caused by an irritation in the upper airway. A hiccup is a spasm of the diaphragm.

There are many diseases that can harm and even destroy the respiratory system. Asthma is an increasingly common disease that causes coughing and makes it hard to breathe. Lung cancer is a major cause of death particularly among smokers. Tuberculosis is a disease caused by bacteria that can destroy the lungs. TB is very contagious and affects cats and other animals in addition to humans. Most people experience minor respiratory problems in the form of a sore throat, cough, or bronchitis from an illness.

People in certain jobs are more likely to have respiratory problems. For example, airline pilots and flight attendants often have respiratory problems. Black lung has historically been a problem of coal miners.

4. Using the following list of phrases explain what can be described:

- process of passing gaseous nutrients to the blood in humans and animals;
- the process in which nutrients are converted into useful energy in a cell;
- cellular respiration without oxygen;
- the process of animals extracting oxygen from water;
- the amount of cellular respiration required for an organism to maintain itself in a constant state;
- the act of simulating respiration, which provides for the overall exchange of gases in the body by pulmonary ventilation, external respiration and internal respiration.

5. Work in pairs. Explain the difference between inhalation and exhalation. Think over possible questions and answers. Act the dialogue out.

6. Read and learn some main terms connected with topic «Cough».

Cough is a common symptom of upper respiratory tract infection (URTI) and lung disease. A cough may be **productive**, where the patient coughs up sputum, or **non-productive**, where there is no sputum. A productive cough is often described as loose and a non-productive cough as dry. **Sputum** (or phlegm) may be clear or white (mucoïd), yellow due to the presence of pus (purulent), or blood-stained (as in haemoptysis).

7. A doctor is examining a patient who is complaining of a cough. Read this dialogue and act it out.

D: How long have you had the cough?
Mr Hamilton: Oh, for years.
D: Do you smoke?
Mr Hamilton: I used to smoke heavily, but I gave up a year ago.
D: Do you cough up any phlegm?
Mr Hamilton: Yes.
D: What colour is it?
Mr Hamilton: Usually yellow.
D: Have you ever noticed any blood in it?
Mr Hamilton: No.
D: Any problems with your breathing?
Mr Hamilton: Yes, I have very short of breath. I have to stop halfway up the stairs to get my breath back.

The doctor writes in the patient's case notes: *c/o dyspnoea & cough c. purulent sputum for years. No haemoptysis.*

8. Read the following case study:

ASTHMA

E.N., a 20-year-old asthmatic woman, visited the preadmission testing unit one week before her cosmetic surgery to meet with the nurse and anesthesiologist. Her current meds included several bronchodilators, which she takes by mouth and by inhalation, and a tranquilizer that she takes when needed for nervousness. She sometimes receives inhalation treatments with Mucomyst, a mucolytic agent. On E.N.'s preoperative note, the nurse wrote:
Theo-Dur 1 cap tid.
Flovent inhaler 1 spray (50 mcg) each nostril bid.

Ativan (lorazepam) 1 mg po bid.

Albuterol – metered dose inhaler 2 puffs (180 mcg) prn q4-6h for bronchospasm and before exercise.

E.N. stated that she has difficulty with her asthma when she is anxious and when she exercises. She also admitted to occasional use of marijuana and ecstasy, a hallucinogen and mood-altering illegal recreational drug. The anesthesiologist wrote an order for lorazepam 4 mg IV 1 hour preop. The plastic surgeon recommended several herbal products to complement her surgery and her recovery. He ordered a high-potency vitamin 3 tabs with breakfast and dinner to support tissue health and healing. He also prescribed Bromelain, an enzyme from pineapple, to decrease inflammation, 1 po qid 3 days before surgery and postoperatively for 2 weeks. Arnica Montana was prescribed to decrease discomfort, swelling, and bruising; 3 tabs sublingual tid the evening after surgery and for the following 10 days [15].

CASE STUDY QUESTIONS

_____ 1. E.N. used a mucolytic drug when needed. This drug's action is to:

- a. increase secretions
- b. decrease spasm
- c. calm anxiety
- d. decrease mucus secretions
- e. simulate mucus

_____ 2. E.N.'s Flovent inhaler is indicated as 1 spray of 50 mcg in each nostril bid. How many micrograms (mcg) does she get in 1 day?

- a. 100 mcg
- b. 200 mcg
- c. 250 mcg
- d. 500 mcg
- e. 5,000 mcg

_____ 3. The Ativan that E.N. takes for nervousness is a(n) _____ drug.

- a. anxiolytic
- b. potentiating
- c. antiemetic
- d. analgesic
- e. bronchodilator

_____ 4. The anesthesiologist ordered lorazepam (Ativan) to be given IV preop to decrease anxiety and to smooth E.N.'s anesthesia induction. The complementary way that lorazepam and anesthesia work together is called:

- a. antagonistic
- b. complementary medicine
- c. parasympathomimetic
- d. tolerance
- e. synergy

_____ 5. Bromelain and Arnica Montana are herbal products that can be described as all of the following except:

- a. phytopharmaceutical
- b. alternative
- c. herbal
- d. complementary
- e. chronotropic

_____ 6. Arnica Montana was prescribed 3 tabs SL tid. How many tabs would E.N. take in 1 day?

- a. 6
- b. 9
- c. 12
- d. 21
- e. 33

_____ 7. Flovent is administered as an inhalant. The form in which the drug is prepared is called

- a(n) _____.
- a. emulsion

- b. elixir
- c. aerosol
- d. suspension
- e. unguent

UNIT 11 RESPIRATORY SYSTEM DISORDERS

1. Ask and answer the questions with a partner.

1. Have you ever had some respiratory disorder?
2. How can you diagnose the disease?

2. Vocabulary. Learn your active words:

auscultation	вислуховування
bronchoscope	бронхоскоп
mucus	слиз
hypoxia	кисневе голодування
pulmonary emphysema	емфізема легенів
pneumonia	запалення легенів
bronchial asthma	бронхіальна астма
virus	вірус
influenza (flu, grippe)	грип
allergic reaction	алергічна реакція
antiasthmatic agents	протиастматичні засоби
smell	запах
cough	кашель
attack	напад
spasm	спазм
failure	недостатність; пошкодження;
	розлад
rhinitis	риніт

Reading/ communication.

1. Read the text.

RESPIRATORY SYSTEM DISORDERS

Sinusitis is the inflammation of the sinuses, located close to the nasal cavities. Chronic sinus infection may cause changes or tumor formation, called polyps.

Rhinitis means a cold in the head or running nose. It's an unpleasant symptom of the common cold. The mucosa of the respiratory tract is one of the most important portals of entry for disease-producing organisms. Droplets from one sneeze may be loaded with many billions of disease-producing organisms. Among the infections transmitted through the respiratory passages are the common cold, diphtheria, chickenpox, measles, influenza, pneumonia, and tuberculosis.

Sensitivity to plant pollens, smells, dust, certain foods, and other allergens may lead to hay fever or asthma, or both. Hay fever is characterized by a watery discharge from the eyes and nose. The symptoms of asthma are spasms of the bronchial tube walls.

Chronic obstructive pulmonary disease (COPD) involves emphysema and bronchitis. In chronic bronchitis the linings of the airways are chronically inflamed and produce excessive secretions. Emphysema is characterized by dilation and finally destruction of the alveoli. In the popular press the word emphysema is used to mean COPD.

Lung cancer is a common disease in the person who smokes cigarettes. Smokers suffer from lung cancer ten times as often as nonsmokers.

Pneumothorax is an accumulation of air in the plural space. Blood in it is called hemothorax.

2. Read the information about special equipment for respiratory tract treatment. Translate the text.

The bronchoscope is a flexible fiber optic tubular instrument for inspection of the bronchi and the larger bronchial tubes.

Oxygen therapy is used to sustain life when some condition interferes with adequate respiration; oxygen may be delivered to the patient by mask, catheter or nasal prongs.

A suction apparatus is used for removing mucus or other substances from the respiratory tract.

A tracheostomy tube is used when the pharynx or larynx is obstructed. A small metal or plastic tube is inserted through a cut made in the trachea, and it acts as an artificial airway for ventilation.

Artificial respiration is made when a patient has temporarily lost the capacity to perform the normal motions of respiration.

3. Imagine and learn the situation: the doctor is examining Mr Hamilton's chest.

Take deep breaths in and out through your mouth. Good. Now say 'ninety-nine'.

Listening to the chest with a stethoscope may reveal the presence of sounds, apart from the normal breath sounds. There are two main kinds of added sounds:

- **crackles**, which sound like hairs being rubbed together and suggest the presence of fluid in the lungs;
- **wheezes**, which are more musical sounds, like whistling, and indicate narrowing of the airways. The sound of an asthma patient's breathing is also called wheezes.

The sound heard when the pleural surfaces are inflamed, as in pleurisy, is called a pleural rub.

The doctor asks Mr Hamilton to say 'ninety-nine' to check vocal resonance, which may be increased (as in pneumonia), or decreased (as in pneumothorax).

After examining Mr Hamilton, the doctor adds to his notes: *OE Chest: early inspiratory crackles both lungs bases + expiratory wheeze.*

4. You are a therapist and receive clinical patients. Talk with a patient who suffers from the pain. Use the phrases below.

- I am going to examine you.
- I will examine you.
- Don't move, please.
- Strip to the waist, please.
- Take your clothes off.
- Unbutton your outerwear, please.
- Would you breathe deeply?
- Breathe deeper.
- Hold your breath.
- Breathe in, breathe out, please.
- Turn your back on me, please.
- Cough, please.
- Cover your mouth, when coughing.
- You may dress.
- Is it more painful when you breathe?
- Is it more painful when you cough?
- How long have you been coughing?
- Are you running a temperature?
- Have you ever coughed up blood?
- You must give up smoking.
- You must not catch cold.
- What causes asthma attacks?
- What relieves asthma attacks?
- I want to listen to your lungs.
- Is your cough productive?
- Do you suffer from dyspnoae?
- Have you ever had haemoptysis?

4. Read the following case study:

EMERGENCY CARE

During a triathlon, paramedics responded to a scene with multiple patients involved in a serious bicycle accident. B.R., a 20-year-old woman, lost control of her bike while descending a hill at approximately 40 mph. As she fell, two other cyclists collided with her, sending all three crashing to the ground.

At the scene, B.R. complained of pain in her head, back, chest, and leg. She also had numbness and tingling in her legs and feet. Other injuries included a cut on her face and on her right arm and an obvious deformity to both her shoulder and knee. She had slight difficulty breathing. The paramedic did a rapid cephalocaudal assessment and immobilized B.R.'s neck in a cervical collar. She was secured on a backboard and given oxygen. After her bleeding was controlled and her injured extremities were immobilized, she was transported to the nearest emergency department.

During transport, the paramedic in charge radioed ahead to provide a prehospital report to the charge nurse. His report included the following information: occipital and frontal head pain; laceration to right temple, superior and anterior to right ear; lumbar pain; bilateral thoracic pain on inspiration at midclavicular line on right and midaxillary line on the left; dull aching pain of the posterior proximal right thigh; bilateral paresthesia (numbness and tingling) of distal lower legs circumferentially; varus (knock-knee) adduction deformity of left knee; and posterior displacement deformity of left shoulder.

At the hospital, the emergency department physician ordered radiographs for B.R. Before the procedure, the radiology technologist positioned a lead gonadal shield centered on the midsagittal line above B.R.'s symphysis pubis to protect her ovaries from unnecessary irradiation by the primary beam. The technologist knew that gonadal shielding is important for female patients undergoing imaging of the lumbar spine, sacroiliac joints, acetabula, pelvis, and

kidneys. Shields should not be used for any examination in which an acute abdominal condition is suspected [15].

CASE STUDY QUESTIONS

_____ 1. The term for the time span between injury and admission to the emergency department is:

- a. preoperative
- b. prehospital
- c. pre-emergency
- d. pretrauma
- e. intrainjury

_____ 2. A cephalocaudal assessment goes from _____ to _____.

- a. stem to stern
- b. front to back
- c. head to toe
- d. side to side
- e. skin to bone

_____ 3. The victim's injured extremities were immobilized before transport. Immobilized means:

- a. abducted as far as they will go
- b. internally rotated and flexed
- c. adducted so that the limbs are crossed
- d. rotated externally
- e. held in body alignment to keep them from moving

_____ 4. A cervical collar was placed on the victim to stabilize and immobilize the _____.

- a. uterus
- b. shoulders
- c. chin
- d. neck
- e. pelvis

_____ 5. The singular form of acetabula is:

- a. acetyl

- b. acetabulum
- c. acetabia
- d. acetab
- e. acetabulae

6. Are the following statements true or false? Give reasons for your answers.

- A.** Crackles are heard when the airways are narrowed.
- B.** A patient who has a loose cough produced phlegm.
- C.** A patient who has a non-productive cough produces sputum.
- D.** Wheezes are typical of pleurisy.
- E.** A pleural rub is a sign of asthma.

UNIT 12 URINARY SYSTEM

1. Ask and answer the questions with a partner.

1. Can you list the systems that eliminate waste products and substances eliminated by them?
2. What do you know about the urinary system?

2. Vocabulary. Learn your active words:

urinary	сечовий
urine	сеча
kidney	нирка
urinary bladder	сечовий міхур
renal pelvis	ниркова миска
margin	край
fatty capsule	жирова капсула
segments	сегменти
tubules	каналі
renal cortex	ниркова кора

medulla of kidneys	нирковий мозок
glomerular	клубочковий
renal arteries	артерії нирки
veins of kidneys	вени нирок
ureter	сечовід
urethra	сечівник
dialysis	діаліз
excretion	виділення
hemodialysis	гемодіаліз
nephron	нефрон
urea	сечовина
diuresis	діурез (виділення сечі)
micturition	сечовипускання
ketone bodies	кетонові тільця

Reading/ communication.

1. Read the text.

URINARY SYSTEM

The urinary system removes wastes from the blood in the form of urine, which is made up of water and dissolved waste products such as urea. By controlling the amount and composition of urine, the urinary system helps control the volume and composition of the blood. Increased production of urine can lower the blood pressure and raise the pH of blood, while decreased production of urine raises blood pressure and decreases pH.

The urinary system consists of the two kidneys, the ureters, the urinary bladder, and the urethra. The ureters lead from each kidney to the urinary bladder, and the urethra leads from the bladder to the exterior of the body.

The kidneys are four to five inches long and shaped like kidney beans. They are located in the top and back of the abdomen, just inside the lowest part of the rib cage. Blood travels to the

kidneys through the renal artery and away from the kidneys through the renal vein. The primary functioning part of the kidney is the nephron, a system of tubes consisting of the glomerulus, Bowman's capsule, and a tubule. The nephrons filter water and small dissolved substances out of the blood to create urine; normally, larger solutes such as plasma proteins do not pass into the kidneys and thus remain in the blood. The presence of some substances in urine, such as proteins or glucose, is often indicative of a disorder.

After has been created in the kidneys, it passes through the ureters to the urinary bladder. The ureters are narrow tubes approximately 10 to 12 inches long. A valve between the ureters and the bladder prevents urine from traveling back toward the kidneys. The urinary bladder stores urine until it is excreted, at which time it passes through the urethra to the outside of the body.

2. Make up a plan and retell the text.

3. Divide into two groups and describe the kidneys and the nephron using this plan.

1. Location.
2. Form.
3. Structure.
4. Functions.

4. Read and act out the dialogue.

D: Are you having any problems with your waterworks?

Mr Jones: Well, I do seem to have to go to the toilet more often than I used to.

D: How often is that?

Mr Jones: It depends, but sometimes it's every hour or even more often.

- D: What about at night? Do you have to get up at night?
- Mr Jones: Yes. Nearly always two or three times.
- D: Do you get any burning or pain when you pass water?
- Mr Jones: No, not usually.
- D: Do you have any troubles getting started?
- Mr Jones: No.
- D: Is the stream normal? I mean is there still a good strong flow?
- Mr Jones: Perhaps not quite so good as it used to be.
- D: Do ever lose control on your bladder? Any leaking or dribbling?
- Mr Jones: Well, perhaps a little dribbling from time to time.
- D: Have you ever passed blood in the urine?
- Mr Jones: No, never.

5. Find some additional information about the functions of the urinary system and prepare a project on this topic.

UNIT 13
URINE

1. Ask and answer the questions with a partner.

1. What disorders of urinary system do you know?
2. How can you identify the disease?
3. What do we understand under the normal urine? Abnormal urine?

Reading/communication.

1. Read the text.

URINE

The urine is a yellowish liquid that is about 95 per cent water and 5 per cent dissolved solids and gases. The amount of these dissolved elements is indicated by specific gravity. The urine has a specific gravity that normally varies from 1002 (very dilute urine) to 1040 (very concentrated urine). The normal substances, found during the test of the urine, are nitrogenous waste products, electrolytes, and yellow pigment.

Urine examination is one of the most important parts of an evaluation of a person's physical state. Here is a list of the most significant abnormal substances found in the urine:

1. Glucose (an indicator of diabetes mellitus). The presence of glucose in the urine is called glucosuria.

2. Albumin (indicates a kidney disorder). The presence of albumin in the urine is called albuminuria.

3. Blood (indicates nephritis or other urinary disorder). The blood in the urine is called hematuria.

4. Ketones are seen in diabetes mellitus or starvation.

5. Pus, white blood cells, is the evidence of infection. Pus in the urine is called pyuria.

6. Casts (циліндри) indicate disease of nephrons.

2. Read the meaning of the following clinical terms and answer the question: what is each of the disorders characterized by?

Glomerulonephritis – inflammation of the kidneys, primarily involving the glomerula; this disease causes destruction of the glomerular capillary walls; the complications are renal failure, retention of urea in the bloodstream (uremia).

Hydronephrosis – enlargement and distention (swelling) of the kidney due to block of urine outflow, caused by renal calculi, tumors, hypertrophy of prostate or narrowing (stricture) of the ureters.

Pyelitis – inflammation of a kidney pelvis.

Nephrolithiasis – the formation of renal calculi (stones) in the renal pelvis, which is followed by obstruction of the kidney, ureter, or bladder.

Pyelonephritis – bacterial infection of one or both kidneys usually involving both the pelvis and the functional tissue. Pyuria is found in urinalyses.

Polycystic kidney – the formation of numerous fluid-filled sacs upon and within the kidney.

Gout – a disease resulting from a disturbance of uric acid metabolism, characterized by an excess of uric acid in the blood and deposits of uric acid salts in various tissues, especially in the joints of the feet and hands: it causes swelling and severe pain, notably in the big toes.

3. Tell about the body systems that have excretory functions.

4. Look through common urinary symptoms and their definitions and imagine that you have a patient with some of this one. Describe your actions and what your provisional diagnosis.

<i>frequency</i>	frequent passing of urine
<i>dysuria</i>	burning or scalding pain in the urethra when passing urine
<i>nocturia</i>	urination at night
<i>urgency</i>	urgent need to pass urine
<i>hesitancy</i>	difficulty starting to pass urine
<i>urinary incontinence</i>	involuntary passing of urine
<i>haematuria</i>	macroscopic blood in the urine

Protein +
Blood +++

Protein +++
Casts nil

UNIT 14 ENDOCRINE SYSTEM

1. Ask and answer the questions with a partner.

1. Could you compare the effects of the nervous system and the endocrine system in controlling the organism?
2. What are the functions of hormones in our organism?

2. Vocabulary. Learn your active words:

gland	залоза
endocrine	ендокринний
pituitary gland (hypophysis)	гіпофіз (мозковий придаток)
pineal gland	шишкоподібна залоза
thyroid gland	щитоподібна залоза
parathyroid glands	прищитовидні залози
superior	верхній
inferior	нижній
thymus gland	загрудинна залоза
pancreas	підшлункова залоза
adrenal	надниркова залоза
gonads	статеві залози
ovary	яєчник
testis	яєчко
prostate	передміхурова залоза
mammary gland	молочна залоза
mucous	слизовий
salivary	слинний
lacrimal	слізний
sweat	піт

Reading/ communication.

1. Read the text.

ENDOCRINE SYSTEM

The nervous system sends electrical messages to control and coordinate the body. The endocrine system has a similar job, but uses chemicals to “communicate”. These chemicals are known as **hormones**. A hormone is a specific messenger molecule synthesized and secreted by a group of specialized cells called an **endocrine gland**. These glands are **ductless**, which means that their secretions (hormones) are released directly into the bloodstream and travel to elsewhere in the body to **target organs**, upon which they act. Note that this is in contrast to our digestive glands, which have ducts for releasing the digestive enzymes.

Pheromones are also communication chemicals, but are used to send signals to other members of the same species. Queen bees, ants, and naked mole rats exert control of their respective colonies via pheromones. One common use for pheromones is as attractants in mating.

Pheromones are widely studied in insects and are the basis for some kinds of Japanese beetle and gypsy moth traps. While pheromones have not been so widely studied in humans, some interesting studies have been done in recent years on pheromonal control of menstrual cycles in women. It has been found that pheromones in male sweat and/or sweat from another “dominant” female will both influence/regulate the cycles of women when smeared on their upper lip, just below the nose. Also, there is evidence that continued reception of a given man’s pheromone(s) by a woman in the weeks just after ovulation/fertilization can significantly increase the chances of successful implantation of the new baby in her uterus. Pheromones are also used for things like territorial markers (urine) and alarm signals.

Each hormone's shape is specific and can be recognized by the corresponding target cells. The binding sites on the target cells are called **hormone receptors**. Many hormones come in antagonistic pairs that have opposite effects on the target organs. For example, **insulin** and **glucagon** have opposite effects on the liver's control of blood sugar level. Insulin lowers the blood sugar level by instructing the liver to take glucose out of circulation and store it, while glucagon instructs the liver to release some of its stored supply to raise the blood sugar level.

Much hormonal regulation depends on **feedback loops** to maintain balance and homeostasis.

There are three general classes (groups) of hormones. These are classified by chemical structure, not function.

Steroid hormones including **prostaglandins** which function especially in a variety of female functions (aspirin inhibits synthesis of prostaglandins, some of which cause "cramps") and the sex hormones all of which are lipids made from cholesterol. **Amino acid derivatives** (like epinephrine) which are derived from amino acids, especially tyrosine, and **peptide hormones** (like insulin) which is the most numerous/diverse group of hormones.

The major human endocrine glands include:

– **adrenal glands which** are a pair of glands that secrete hormones directly into the bloodstream. Each gland can be divided into two distinct organs. The outer region secretes hormones which have important effects on the way in which energy is stored and food is used, on chemicals in the blood, and on characteristics such as hairiness and body shape. These glands are about one to two inches in length and weigh only a fraction of an ounce each while secreting more than three dozen hormones. They take instruction from the pituitary glands and have important effects on physical characteristics, development and growth. The adrenal gland has two parts: the cortex, or outer, yellow layer, and the inner, reddish brown layer.

– **pancreas** is a long, tapered gland which lies across and behind the stomach. This gland secretes digestive juices which break down fats, carbohydrates, proteins and acids; it also secretes bicarbonate, which neutralizes stomach acid as it enters the duodenum. Some cells in the pancreas secrete hormones which regulate the level of glucose in the blood. Most of the pancreas consists of tissues which are embedded in “nested” cells. These cells secrete the digestive enzymes into tubes which meet to form the main duct. This duct joins the “cystic” duct (which carries bile from the gallbladder) and forms a small chamber which opens into the duodenum. The cells of the pancreas are surrounded by many blood vessels into which they secrete hormones (glucagon and insulin) into the blood.

– **pituitary gland**, which is located in the center of the skull, just behind the bridge of the nose, is about the size of a pea. It is an important link between the nervous system and the endocrine system and releases many hormones which affect growth, sexual development, metabolism and the system of reproduction. The “hypothalamus” is a tiny cluster of brain cells just above the pituitary gland, which transmits messages from the body to the brain. The pituitary gland has two distinct parts, the anterior and the posterior lobes, each of which releases different hormones which affect bone growth and regulate activity in other glands. This “master gland” is really a way station between the body and the brain and sorts out messages going to and from the brain. It responds to the body through the pituitary gland, which is suspended just below it. It sometimes replies by nerve impulses and sometimes with needed hormones. The pituitary gland then makes hormones of its own in answer to the body’s needs. These are then circulated in the blood to a variety of the body's tissues, including other endocrines, such as the adrenal gland.

– **thymus** is a gland that forms part of the immune system. It is situated in the upper part of the chest, behind the breastbone, and is made up of two lobes that join in front of the trachea. Each lobe is made of lymphoid tissue, consisting of tightly packed white blood

cells and fat. The thymus enlarges from about the 12th week of gestation until puberty, when it begins to shrink.

Its function is to transform lymphocytes (white blood cells developed in the bone marrow) into T-cells (cells developed in the thymus). These cells are then transported to various lymph glands, where they play an important part in fighting infections and disease. Swelling of lymph glands and fever are a signal that immune cells are multiplying to fight off invaders of the body: bacteria, fungi, viruses or parasites. Edward Jenner showed his faith in vaccination by injecting his own son with cowpox, therefore immunizing the child against smallpox, a deadly disease at that time in history.

– **thyroid and parathyroid glands.**

The thyroid gland is shaped like a butterfly and usually weighs less than one ounce. The thyroid cartilage covers the larynx and produces the prominence on the neck known as the “Adam's Apple”. The thyroid gland controls the rate at which the body produces energy from nutrients. If the body does not get enough iodine, the thyroid gland cannot produce a proper amount of hormones for this conversion process. The result can be a goiter, an enlargement of the thyroid gland. In some parts of the world, iodine is so scarce that most of the population have goiters. The parathyroid glands are four small oval bodies located on either side of and on the dorsal aspect of the thyroid gland. These glands control the level of calcium in the blood. The thyroid gland secretes hormones which regulate energy, and emotional balance may rely upon its normal functioning. When the rate of production is excessive, the results can be weight loss, nervousness, or even emotional disturbances. If the rate of production is excessively low, a slowing of bodily functions may result. The parathyroid glands, located behind the thyroid, control the blood- calcium level. Calcium is important, not only for bones and teeth, but also for nerve functioning, muscle contractions, blood clotting and glandular secretion. If we don't have enough calcium for these functions, the body will take it from the bones, causing them to easily fracture. It may also cause twitching, spasms,

convulsions and even death. Too much calcium may cause a weakening of muscle tone and kidney stones.

2. Pay attention to the italics terms, translate them and use in your own sentences.

3. Gonads are the next human glands which are very important. Find out the information about their function in our body and discuss with your partner.

4. Read this letter of referral and discuss the reason of going to an endocrinologist.

Dear Doctor,

I would be grateful if you would see Mrs Davis's, this 50-year-old woman who has lost 20 kilos in weight in spite of eating more than usual. She describes herself as overactive and at first she thought the weight loss was due to this. But more recently she has developed palpitations, diarrhea, and heat intolerance. She has noticed that her hands have a tendency to shake.

Her symptoms suggested hyperthyroidism and this was confirmed by my examination which revealed an enlarged thyroid, red sweaty palms and fine tremor of the hands.

5. Match Mrs Davis's symptoms (1-7) with the questions her doctor asked (A-G).

- | | |
|---------------------|--|
| 1. Diarrhea | A. Do you prefer hot weather or cold? |
| 2. Eating more | B. Is your weight steady? |
| 3. Heat intolerance | C. What is your appetite like? |
| 4. Overactivity | D. Are your bowels normal? |
| 5. Palpitation | E. Are you able to sit and relax? |
| 6. Weight loss | F. Do your hands shake? |
| 7. Tremor | G. Have you ever felt your heart beating rapidly or irregularly? |

6. Read the following case study and discuss it.

LATEX ALLERGY

M.R., a 36-year-old certified registered nurse anesthetist (CRNA), was diagnosed 7 years ago with latex allergy. She first noticed that she developed contact dermatitis when she wore powdered latex gloves. She soon developed tachycardia, hypotension, bronchospasm, urticaria, and rhinitis with contact or proximity to latex in surgery. She had one frightening episode of anaphylaxis. Her allergy is of the type I hypersensitivity, IgE T-cell-mediated latex allergy, which was diagnosed by both a radioallergosorbent test (RAST) and a skin-prick test.

M.R. avoids all contact with any natural rubber latex in her home and at work. She can only work in a pediatric OR because they are latex-free, since many children with congenital disorders are latex allergic. She wears a medical alert bracelet, uses a bronchodilator inhaler at the first symptom of bronchospasm, and carries a syringe of epinephrine at all times [15].

CASE STUDY QUESTIONS

_____ 1. The natural latex protein in latex gloves may act as a(n):

- a. antibody
- b. allergen
- c. lymphocyte
- d. purpura
- e. immunocyte

_____ 2. Urticaria is commonly called:

- a. rhinitis
- b. dermatitis
- c. hives
- d. ELISA
- e. congenital

_____ 3. The cells involved in a T-cell-mediated allergic response are:

- a. basophils
- b. monocytes
- c. antigen
- d. T lymphocytes
- e. B cells

_____ 4. Anaphylaxis, a life-threatening physiological response, is an extreme form of:

- a. remission
- b. hypersensitivity
- c. hemostasis
- d. exacerbation
- e. homeostasis

_____ 5. The common name for epinephrine is:

- a. heparin
- b. adrenaline
- c. cortisone
- d. apheresis
- e. antihistamine

UNIT 15 TISSUES, GLANDS AND MEMBRANES

1. Ask and answer the questions with a partner.

1. Do you know the interaction between tissues, glands and membranes?

Reading/ communication.

1. Read the text.

TISSUES, GLANDS AND MEMBRANES

Tissues are groups of cells similar in structure, specialized for the performance of specific tasks. The science that studies all about tissues is called histology.

In the human body there are four groups of tissues: epithelial, connective, nerve and muscle.

Epithelium forms a protective covering of the body and all the organs, it lines the cavities. The epithelial tissue is classified according to the shape of cells. The cells may be:

- squamous – flat and irregular;
- cuboidal – cubic;
- columnar – long and narrow.

They may be arranged in a single layer (simple) and in many layers (stratified).

The cells of some kinds of epithelium produce mucus – a clear, sticky fluid, digestive juices, sweat, etc.

The epithelial tissue also forms glands. A gland is a group of cells specialized to produce a substance that is sent out to other parts of our body.

There are two categories of glands: exocrine and endocrine. Exocrine glands have ducts or tubes to carry the secretion from the gland to another organ, to a body cavity, or to the outside.

Endocrine glands depend on the bloodstream. Their secretion, called hormones, is carried through the lymph or blood to other organs and they have specific effects on other tissues. Connective tissue supports, binds and forms the framework of the body. Connective tissue may be classified simply according to its degree of hardness:

- 1) soft – adipose tissue and fibrous connective tissue;
- 2) hard – cartilage and bone;
- 3) liquid – blood and lymph.

The adipose tissue stores up fat for the body as reserve food, serves as heat regulator. The fibrous tissue consists of collagen and elastic fibers between cells. It may be areolar or dense (fascia, ligament, tendons, capsules). Cartilages are found at the ends of bones, nose, outer ear, trachea, etc. Bones contain calcium salts. The tissue from which bones are made is called the osseous tissue. The nerve tissue is the building material for the central nervous system: our brain and spinal cord and peripheral nervous system. The simplest unit of the nerve cell is neuron.

The muscle tissue is designed to produce movement with the help of contractions. Muscle tissue cells are called muscle fibers.

Usually they are classified as follows:

- 1) skeletal – a voluntary muscle that moves the skeleton;
- 2) cardiac – forms the heart;
- 3) smooth – involuntary, forms visceral organs.

Membranes are thin sheets of tissue. There are four types of membranes:

- mucous membranes line tubes and spaces that open to the outside (respiratory, digestive, reproductive tracts);
- serous membranes line body cavities (parietal layer) and cover internal organs (visceral layer);
- cutaneous membrane is the skin;
- synovial membranes line the joint cavities, they secrete a fluid that reduces friction between the ends of bones, it permits free movement of joints.

You already know that normal tissue growth may be broken by an upstart formation of cells. This is a tumor, or neoplasm. If a tumor is confined to a local area and doesn't spread, it is called a benign tumor. If the tumor spreads to the neighboring tissues or distant parts of the body, it is called a malignant tumor, or cancer.

The process of tumor spread is called metastasis. Here is a list of some benign and malignant tumors (the root *oma* means tumor): papilloma, adenoma, lipoma, osteoma, myoma, angioma, chondroma, carcinoma, sarcoma, lymphoma, glioma.

2. Are the sentences true or false?

1. Tissues are groups of cells specialized for certain task.
2. There are ten groups of tissues.
3. Exocrine glands produce hormones.
4. The connective tissue can be hard, soft and liquid.
5. Neuron is a blood cell.
6. Membranes are thin sheet of cells.
7. Tumor growth can be controlled.
8. Benign tumors are localized.

3. Answer the following questions.

1. What shapes of cells are found in the epithelial tissue?
2. What kind of fibers are found in the connective tissue?
3. What is the main purpose of the nerve tissue?
4. What kinds of muscle tissue do you know? Give examples.
5. What is the difference between voluntary and involuntary muscles?
6. What are the two types of the epithelial membrane?
7. What is a tumor? Cancer?
8. What is the difference between benign and malignant tumors?

4. Give definitions of the following words.

Tissue, connective tissue, epithelium, membrane, tumor, benign tumor, malignant tumor, gland.

5. Explain the meaning of the following words (in Ukrainian).

Myoma, lipoma, osteoma, chondroma, adenoma, fibroma.

6. Describe the differences between exocrine and endocrine glands. Give some examples of each.

UNIT 16 DISEASES OF THE ENDOCRINE SYSTEM

1. Ask and answer the questions with a partner.

1. What reasons of endocrine system diseases do you know?
2. Can you guess the ways how to avoid them.

Reading/ communication.

1. Read and translate the names of different diseases caused by abnormal activity of the endocrine glands.

Goiter (306), the enlarged thyroid.

Hyperthyroidism (гіпертиреоз), produces exophthalmic goiter, it leads to loss of weight, nervousness, a rapid pulse, protrusion of the eyes, sweating.

Hyperthyroidism causes cretinism or myxedema because of failure of the thyroid gland.

Hypoparathyroidism causes hypocalcemia. It can lead to tetany (пращець).

Addison`s disease is caused by failure of the adrenal glands. It is characterized by weight loss, weakness, low blood pressure, brownish pigmentation of the skin, hypoglycemia.

Diabetes insipidus (нецукровий діабет) is characterized by the heavy discharge of mine (polyuria) and intense thirst (polydipsia).

Diabetes mellitus (цукровий діабет), deficiency of insulin prevents sugar from leaving the blood, so it is characterized by excess of sugar in the urine; hunger, thirst and quick loss of weight.

Hyperinsulinism is the excessive secretion of insulin from the pancreas. The patients may be convulsing and fainting.

2. Find out more information about these diseases and imagine that you are a doctor and write a referral letter to an endocrinologist for a patient who you believe has one of the disease. Use the letter from the previous lesson as a model.

3. Complete the explanation of diabetes using the following words: *give you advice on; want you to; developed; make you an appointment with / arrange for you to see; Hopefully we can; (mainly) because you are; arrange for you; This is why / It's the reason why; going to start you on; anything you'd like to ask; should / should try to.*

You've _____ Type 2 diabetes. This is _____ very overweight. Your body isn't producing enough insulin. _____ you feel so thirsty and why you pass urine so

frequently. It's also the reason you have this very itchy rash and you have a problem with your eyes.

The nurse will _____ your diet and I'll _____ a dietician. I'm _____ tablets to control your high blood sugar. You don't need insulin right now but it is possible you might need it in the future.

You _____ lose weight and I _____ see a podiatrist. It's important with diabetes that you take good care of your feet. You should also see your optician every six months for eye checks.

Diabetes is a serious condition and can affect your heart, blood pressure, circulation, kidneys and vision but we can limit these problems by controlling your blood sugar.

No case of diabetes can be described as mild. I'll _____ to attend the diabetic clinic every two months so we can check your progress. _____ reduce this to six monthly visits once your condition is under control. Is there _____ ?

4. Read the text and translate it.

STUDY OF DISEASES

Disease is an abnormal state in which part or all the body doesn't function as usual. There are marked variations in the extent of disease and in its effect on the person. Disease can have a number of direct causes, such as disease-producing organisms (bacteria, viruses, parasitic worms, or helminthes); malnutrition (lack of vitamins, minerals, proteins); physical and chemical agents (heat or cold, injuries, fractures; poisonous substances, certain detergents); birth defects, degenerations and tumors.

There are also indirect, or predisposing causes. The examples of them are age, sex, heredity, living conditions and habits, occupation, physical exposure, preexisting illness, psychogenic influences.

The modern approach to the study of disease emphasizes the close relationship of the pathologic and physiological aspects and the

need to understand the fundamentals of each in treating any body disorder. This is the medical science called pathophysiology.

The study of the cause of any disease or the theory of its origin, is called etiology.

Disease can be acute, chronic or subacute. Acute is severe but doesn't last long. Chronic lasts for a long time. Subacute is between them, it's neither severe but lasts for a long period.

A communicable disease is one that can pass from one person to another. Epidemic is a disease of many people in a given region at the same time. Endemic is a disease of fewer people but it is characteristic of a particular region.

Pandemic is a disease of a country, continent or the whole world.

In order to treat the patient every doctor must make a diagnosis. So he must know symptoms and signs of the disease. Although nurses do not diagnose, they play a very important role in observing closely for signs, encouraging patients to talk about themselves and their symptoms, and then reporting the doctor this information.

If the doctor knows about the disease, he prescribes the treatment.

In recent years, physicians, nurses, and other health care workers have taken on increasing responsibilities for prevention of diseases.

5. Make up a plan to the text.

6. Answer the questions.

1. What is disease?
2. What kind of diseases do you know?
3. What causes diseases?
4. What does pathophysiology study?
5. What disease do we call communicable?
6. What is epidemic? Endemic? Pandemic?
7. What is the role of nurses in looking after patients?
8. What do medical workers do to prevent diseases?

7. Imagine that you are invited to the studio and have to explain the function of endocrine system in our body. Also you have to be ready to answer the questions of the audience.

UNIT 17 THE NERVOUS SYSTEM

1. Ask and answer the questions with a partner.

1. Do you suffer from headaches?
2. Have you ever had a blackout?
3. What about fits?
4. Have you ever had dizziness?
5. Do you get ringing in the ears?
6. Do you have any problems sleeping?

2. Vocabulary. Learn your active words:

neuron	нейрон
nerve	нерв
nerve fibers	нервові волокна
nerve endings	нервові закінчення
synapse	синапс
afferent nerve fibers	чутливі (аферентні) нервові волокна
efferent nerve fibers	рухові (еферентні) нервові волокна
ganglion	ганглії, вузол
impulse	імпульс
neurotransmitter	нейротрансмітер, нейромедіатор
plexus	сплетіння
Receptor	рецептор
Dendrites	дендрити
myelin	мієлін

neurilemma
brain
spinal cord

неврилема
ГОЛОВНИЙ МОЗОК
СПИННИЙ МОЗОК

Reading/ communication.

1. Read the text.

THE NERVOUS SYSTEM

Organs of the nervous system, like other organs, are composed of various kinds of tissues, including nerve tissue, connective tissues, and blood. These organs can be divided into two groups. One group, consisting of the brain and spinal cord, forms the **central nervous system (CNS)**, and the other, composed of the nerves (peripheral nerves) that connect the central nervous system to other body parts, is called the **peripheral nervous system (PNS)**. Together these systems provide three general functions— a sensory function, an integrative function, and a motor function.

General Functions of the Nervous System

The sensory function of the nervous system involves sensory *receptors* at the ends of peripheral nerves. These receptors are specialized to gather information by detecting changes that occur inside and outside the body. They monitor such external environmental factors as light and sound intensities as well as the temperature, oxygen concentration, and conditions of the body's internal fluids.

The information that is gathered is converted to signals in the form of *nerve impulses*, which are then transmitted over peripheral nerves to the central nervous system. There the signals are integrated – that is, they are brought together, creating sensations, adding to memory, or helping produce thoughts. As a result of this integrative function, conscious or subconscious decisions are made and then acted upon by means of motor functions.

The motor functions of the nervous system employ peripheral nerves that carry impulses from the central nervous system to

responsive parts called *effectors*. These effectors are outside the nervous system and include muscles that contract when they are stimulated by nerve impulses, and glands that produce a secretion when they are stimulated.

Thus, the nervous system can detect changes occurring in the body, make decisions on the basis of the information received, and cause muscles or glands to respond. Typically, these responses are directed toward counteracting the effects of the changes, and in this way, the nervous system helps maintain homeostasis.

2. Define the following terms.

Neuron, nerves, tracts, reflex, synapse, axon, dendrite, effector.

3. Differentiate between the sympathetic and parasympathetic nervous systems.

4. Read the text and try to understand the main idea.

Role of Nervous System

The nervous system regulates the activities of different organs and of the entire organism. Muscular contractions, glandular secretion, heat action, metabolism and many other processes continuously operating in the organism are controlled by the nervous system.

The nervous system links the various organs and systems, coordinates all their activities and ensures the integrity of the organism.

The work of each organ or system of organs may be affected by various conditions. A change in function of one organ or system of organs leads to changes in the function of other organs and systems. For example, during physical work involving intensive muscular contraction the metabolism in muscles increases, which consequently increases the requirement in nutrients and oxygen. A reflex response causes the heart and lungs to work more intensively, with the result that the flow of the blood to the muscles increases. At the same time

heat production and heat loss increase, the excretory organs work harder.

The unity of the organism and its external environment is affected through the nervous system. All the outside stimuli are perceived by the nervous system through the sense organs. In response to the stimuli the functions of the various organs change and the organism adapts itself to its surroundings or, as I. Pavlov put it, the organism is equilibrated with the external environment. This equilibrium forms the basis of the organism's vital activities. Thus in response to ingestion of food the activity of the digestive glands increases and is adapted to the character of the ingested food. A rise in temperature of the surrounding air causes an increased flow of blood to the skin and greater perspiration, which prevents overheating of the organism.

It should be remembered that unlike animals, man can himself considerably change his external environment.

Man's brain is the material basis of thinking and speech.

I. Pavlov demonstrated that man's so-called psychic activity is based on physiological processes operating in the cerebral cortex.

5. Make up a plan and retell the text.

UNIT 18 PAIN

1. Ask and answer the questions with a partner.

1. Have you ever felt any pain?
2. Could you describe your feelings?
3. Who can't feel pain?
4. What reasons of pain do you know?

Reading/ communication.

1. Read the text.

PAIN

There are no adequate stimuli for pain; any form of stimulus evokes pain if it's sufficiently strong. Pain is the most primitive and one of the most important sensations. It is generally held that the free nerve endings of small myelinated fibers which do not end in specialized anatomic structures constitute the receptors for pain. They are the most widely distributed receptors in the body, being found in the skin, cornea, blood vessels, and most viscera. The threshold of irritability is high; consequently, the stimulations appearing in them are of such intensity as to threaten health and life. For this reason, they are frequently called nociceptors. They elicit protective and defensive reflexes. Because of their vital importance, the impulses from the nociceptors always take precedence in the reflex activity of the nervous system.

Many internal organs are insensitive to what are generally regarded as painful stimuli. Tumors have been removed from the brain of patients, who remained conscious during the entire operation, without causing any pain. Handling, cutting or cauterizing the intestine never gives rise to pain. However, pain can be elicited from most hollow organs by an increase of the tension of their walls: this is brought about by great distension (e.g. accumulation of gas in the intestine, or the passage of a gallstone through the bile ducts) or by excessive contraction of their musculature.

Pain can be relieved by reducing the irritability of the nerve as by compression, cold, drugs or by reducing the sensitivity of the cerebral cells, as in general anesthesia.

Pain can be elicited by stimulating a nerve fiber at any point along its course, but the sensation is always referred, or projected, to the endings of the nerve.

Pain cannot always be definitely localized, especially when it is severe and of long duration, the sensation then seems to spread to neighboring parts.

Pain experienced in internal organs is sometimes referred to another and generally, external part of the body. In diseases of some internal organs, certain cutaneous areas may become hyperalgesic (excessively sensitive to pain), so that the least stimulation, such as a soft touch, or even a breath of air, applied to this part of the skin gives rise to pain.

2. Read and translate the following clinical conditions of brain disorders.

Ataxia is the lack of muscular coordination.

Aphasia is a total or partial loss of the power to use or understand words. This condition is caused by brain disease or injury.

Cerebrovascular accident is the condition involving bleeding from the brain or obstruction of blood flow to the brain tissue.

Encephalomyelitis is the inflammation of the brain and spinal cord. In most cases it is a virus disease.

Parkinson's disease appears commonly in people over 60. This disease is characterized by tremors, slowness of movement, body rigidity, and inability to maintain posture.

Epilepsy is a chronic disorder involving an abnormality of the electric activity of the brain with or without apparent changes in the nerve tissues. The cause of diseases is unknown. The attacks of epilepsy may be so mild as to be hardly noticeable or so severe as to result in loss of consciousness.

Tumors of the brain are growths of brain tissues and meninges of abnormal character.

Glioma is a tumor that arises from supporting structure of nerves - neuroglia. Multiple sclerosis is a chronic disease in which there is scattered demyelination of the central nervous system: it is characterized by speech defects, loss of muscular coordination, etc.

3. What do you know about such brain studies as CT (computer tomography), MRI (magnetic resonance imaging) and PET (positron emission tomography)?

4. Match the term with its definition:

PET (positron emission tomography)

gives even clearer pictures of the brain without the use of dyes or X-rays. The method is based on computerized interpretation of the movements of atomic nuclei following exposure to radio waves within a powerful magnetic field. It gives more views of the brain and hemorrhaging not shown by CT.

CTS (computer tomography scan)

With one can actually see the brain in action. With this method, a radioactively labelled substance, for example glucose, is followed as it moves through the brain. It may be recorded by an instrument called electroencephalograph. The recorded tracings or brain waves produce an electroencephalogram (EEG).

MRI (magnetic resonance imaging)

the major tool for clinical study of the brain. By means of a computer, the information is organized and displayed as photos of bones, soft tissues, and cavities of the brain.

5. Examine a patient following the steps:

- ✓ *Introduce yourself, if necessary.*
- ✓ *Brief the patient on what he/she should expect in a clear and simple way.*

Do you know what we're going to do this morning?

What we're going to do today is....

I'm going to examine your so I can find out what's causing this

....

I'll ask you to

Are you ready?

Ok?

- ✓ *Instruct the patient in a clear but polite manner.*

Could you bend forward as far as you can?

If you could cross your arms in front your chest.

What I'd like to do is examine you standing up.

Stand with your feet together.

Lie perfectly still.

Can you just turn to the side again?

Could you just lie on the couch?

- ✓ *Show sensitivity to the patient's needs and respond to discomfort, reassuring if appropriate.*

You might feel a little bit of discomfort.

This might hurt a little but I'll be quick.

Let me know if it's

It won't take long.

You are doing very well.

- ✓ *Talk the patient through the procedure.*

I'm just going on to

First I'll ...

Then I'll ...

Now I'm going to ...

You'll feel ...

When it's over I'll

That's it. All over.

- ✓ *Share your findings with the patient.*

Well, I'm fairly certain you've got a

One possibility is it could be what we call

I haven't found anything to suggest any problem.

- 6. Complete the instructions using suitable verbs: *look at; sit, let; close; touch; lie; look, touch; take, off; keep; roll up; turn.***
1. _____ straight ahead and _____ your nose with your right forefinger; then with your left forefinger.
 2. _____ on the edge of the couch and _____ your legs hang loosely.
 3. _____ your eyelids tightly.
 4. _____ all your clothes _____ down to your underwear.
 5. _____ your chest with your chin.
 6. _____ slowly and look over your left shoulder.
 7. _____ on your side.
 8. _____ looking at me.
 9. _____ your sleeve.
 10. _____ the pin, not the light.

References

1. Applegate M. The Skeletal System / M. Applegate, V. Edith, Kent Van De Graaff. – Washington : NCA, 2009. – 30 p.
2. Bárány J. Smooth muscle / J. Barany, K. Michael. – Washington : NCA, 2008. – 350 p.
3. Brown Peter. Microparasites and Macroparasites / Peter Brown. – Amsterdam : Cultural Anthropology. 2 (1), 2015. – P. 155–171.
4. CDC - Parasites - About Parasites". www.cdc.gov. 2019-02-25. Retrieved 2019-12-09.
5. Chisholm, Hugh [Electronic resource] // Encyclopædia Britannica (11 ed.). Cambridge University Press. – Access mode : https://en.wikipedia.org/wiki/Encyclopædia_Britannica_Eleventh_Edition.
6. Cynthia K. Musculoskeletal System Introduction / K. Cynthia, S. Line. – NJ: Merck & Co., Inc, 2007. – 160 p.
7. Definition of “infection” from several medical dictionaries [Electronic resource] // CRS, 2012. – Access mode : <https://medical.dictionary.thefreedictionary.com/infection>.
8. Dictionary.com. Flowood : LLC, 2015. – 220 p.
9. Engelbert G. The Human Body / G. Engelbert, B. Phillis ; Nagel Carol DeKane. – Billings : U·X·L Science Fact Finder, 2009. – 25 p.
10. Engelbert G. The Skeletal system / G. Engelbert, B. Phillis ; Nagel Carol DeKane. – Billings: U·X·L Science Fact Finder, 2012. – 25 p.
11. First evidence of immune system [Electronic resource] // Eureka!ert. – Access mode : https://www.eureka!ert.org/pub_releases/2019-10/bidm-sfe101719.php.
12. Gary R. The Musculoskeletal System / R. Gary, D. Farr. – Bloomington : Authorhouse, 2008. – 220 p.
13. Infectious diseases. – Boston : Clinic University of Utah Hospital, 2019. – 220 p.

14. Infectious Disease and Internal Medicine. – Arizona : Association of American Medical Colleges, 2019.
15. Introduction to medical terminology [Electronic resource]. – Access mode : <https://www.slideshare.net/EnzoOliveraLaureano1/texto-de-medical-english>.
16. Mooar N., Pekka F. Muscles / N. Mooar, F. Pekka. – London: Merck Manual, 2008. – 180 p.
17. Mortality and Causes of Death, Collaborators. – London : BLM, 2014. – 116 p.
18. Musculoskeletal System at the US National Library of Medical Subject Headings [Electronic resource] // MeSH. – Access mode : https://en.wikipedia.org/wiki/Medical_Subject_Headings.
19. Pradeep Kumar; Jamil, Radia T. Cryptococcus. – NY: StatPearls Publishing, 2019. – 55 p.
20. Signore Alberto. About inflammation and infection / Alberto Signore. – Boston : EJNMMI, 2013. – 98 p.
21. The Mechanism of Muscle Contraction [Electronic resource]. – Principles of Meat Science (4th Edition), 2008. – Access mode : <https://meat.tamu.edu/ansc-307-honors/muscle-contraction/>.
22. Types of Fungal Diseases: Fungal Diseases. – Boston : CDC, 2019. – 145 p.
23. Utilizing antibiotics agents effectively will preserve present day medication. – News Ghana : NGC, 2015. – 250 p.
24. What are HIV and AIDS [Electronic resource] // MITA. – Access mode : <https://www.avert.org/about-hiv-aids/what-hiv-aids>.

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