САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ

LET'S READ AND TALK ABOUT MEDICINE

Учебные задания по английскому языку
для студентов медицинского факультета

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Утверждено на заседании кафедры английского языка для медицинских и биологических специальностей в качестве учебных заданий

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Издание предназначено для студентов и аспирантов медицинского факультета. Целью заданий является расширение словарного запаса студентов и специалистов в области медицины и здравоохранения, а также — развитие навыков чтения и перевода.

Может использоваться для аудиторной и самостоятельной работы в рамках подготовки к экзамену по английскому языку.

В подготовке издания использовались оригинальные учебные тексты, а также статьи из журналов и Интернета.

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Оглавление

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Part I. Health and Medicine in the World. Choosing medical profession.

Text 1. Health

Pre-reading task.

1. Think about your own definition of *health*. What are the most important points of being healthy for you?

2. Read the text. Pay attention to the definition given in the Encyclopaedia of Britannica. Do you agree with it? Is it similar to your own definition? If not, how is it different? While reading, put down the names of different diseases and medical terms into your note-books.
Find synonyms and try to explain the meaning of the following words: *to cope with; a drawback; to succumb to; anemia; tangible; variability; unsound; of unsound mind; to deem; imminent; mishap; to be afflicted with.*

Check the pronunciation of the following words in the dictionary: *allergy – allergic -allergen, gene – antigen, variable – variability-variably-vary.*

*Health - in human beings, the extent of an individual's continuing physical, emotional, mental, and social ability to cope with his environment. (*Encyclopaedia Britannica)

This definition, just one of many that are possible, has its drawbacks. The rather fragile individual who stays “well” within the ordinary environment of his or her existence may succumb to a heart attack from heavy shovelling after a snowstorm; or a sea-level dweller may move to a new home in the mountains, where the atmosphere has a lower content of oxygen, and suffer from *shortness of breath* and *anemia* until his *red blood cell count* adjusts itself to the altitude. Thus, even by this definition, the conception of good health must involve some allowance for change in the environment.

Bad health can be defined as the presence of disease, good health as its absence—particularly the absence of *continuing disease*, because the person *afflicted with a sudden attack* of seasickness, for example, may not be thought of as having lost his good health as a result of such a mishap.

Actually, there is a wide variable area between health and disease. Only a few examples are necessary to illustrate the point: (1) it is physiologically normal for an individual, 15 to 20 minutes after eating a meal, *to have high blood sugar content*. If, however, the sugar content remains elevated two hours later, this condition is abnormal and may be indicative of disease. (2) A “healthy” individual may have *developed an allergy*, perhaps during early childhood, *to* a single specific substance. If he never again comes in contact with the antigen that *causes the allergy*, all other factors remaining normal, he will remain in that state of health.

Should he, however, *come in contact with that allergen*, even 20 or 30 years later, he may *suffer* anything *from a mild allergic reaction*—a simple *rash*—to severe *anaphylactic shock*, *coma*, or even death, depending upon the circumstances. Thus it can be seen that, unlike disease, which is frequently recognizable, tangible, and rather easily defined, health is a somewhat nebulous condition, and somewhat difficult to define.

Moreover, physical condition and health are not synonymous terms. A seven-foot-tall basketball player may be in excellent *physical condition* (although outside the range of normality for height) but may or may not be in good health—depending, for example, on whether or not he has fallen victim to an attack of influenza.

There are further problems in settling upon a definition of human health. A person may be physically strong, *resistant to infection*, *able to cope with* physical hardship and other features of his physical environment, and still be considered *unhealthy* if his mental state, as measured by his behaviour, is deemed unsound.

What is mental health? Some say that a person is *mentally healthy* if he is able to function reasonably well. Others hold that a person is healthy mentally if his behaviour is like that of a majority of his fellows.

In the face of this confusion, it is most useful, perhaps, to define health, good or bad, in terms that can be measured, can be interpreted with respect to the ability of the individual at the time of measurement to function in a normal manner and with respect to the likelihood of *imminent disease*. These measurements can be found in tables of "reference values" printed in textbooks of clinical medicine, diagnosis, and other references of this type. When an individual is *given a health examination*, the examination is likely to include a *series of tests*. Some of these tests are more descriptive than quantitative and can *indicate the presence of disease* in a seemingly healthy person. Such tests include the *electrocardiogram* (ECG) to detect some kinds of heart disease; *electromyogram* for primary *muscle disorders*; *liver* and *gall bladder* function tests; and *X-ray techniques* for determining disease or *malfunction* of *internal organs*.

Other tests give numerical results (or results that can be assigned numerical values—such as photometric colour determinations) that can be interpreted by the examiner. These are physical and chemical tests, including blood, urine, and spinal-fluid analyses. The results of the tests are compared with the reference values; and the physician receives clues as to the health of his patient and, if the values are *abnormal*, for the methods of improving his health.

A major difficulty in the interpretation of test results is that of *biological variability*. Almost without exception these reference values for variables are means or adjusted means of large group measurements. For these values to have significance, they must be considered as lying somewhere near the centre point of a 95 percent range—i.e., the so-called ordinary range or, with reservations, the range from normal to the upper and lower borderline limits. Thus, the 2.5 percent below the lower limit and the 2.5 percent above the upper limit of the 95 percent range are considered areas of *abnormality* or, perhaps, illness. Some areas have wide 95 percent ranges—blood pressure, for example, may vary considerably throughout the day (e.g., during exercise, fright, or anger) and remain within its range of normality. Other values have ranges so narrow that they are termed physiological constants. An individual's body temperature, for example, rarely varies (when taken at the same anatomical site) by more than a degree (from time of rising until bedtime) without *being indicative of infection* or other illness.

Comprehension Check.

I. Look at the following definitions and find an appropriate word for them.

1. A physical condition producing an unfavourable reaction to certain foods, substances, etc.
2. An acute and very contagious virus disease marked by fever, aches and pains and respiratory inflammation.
3. Able to oppose, to remain unchanged, unharmed by something.
4. Likely to happen very soon.

5. Faulty or bad functioning.
6. Different in an undesirable way, not normal.
7. To give up, to die.
8. To contend/ to struggle with something successfully.
9. Changeable, likely to change or vary.

II. Insert the prepositions and conjunctions where necessary.
Bad health can be defined … the presence of disease, good health as the absence of continuing disease, because the person afflicted … a sudden attack of seasickness, for example, may not be thought … as having lost his good health as a result of such a mishap. Actually, there is a wide variable area between health and disease.

A fragile individual who stays "well" … the ordinary environment of his or her existence may succumb … a heart attack … heavy shovelling after a snowstorm; or a sea-level dweller may suffer … shortness of breath and anemia in his new home in the mountains … his red blood cell count adjusts itself … the altitude. It is physiologically normal … an individual, 15 to 20 minutes after eating a meal, to have a high blood sugar content. If, however, the sugar content remains elevated … two hours later, this condition is abnormal and may be indicative … disease.
There are further problems … settling upon a definition of human health. A person may be physically strong, resistant … infection, able to cope … his physical environment, and still be considered … unhealthy if his mental state, as measured … his behaviour, is deemed unsound.

III. Answer the following questions.
1. What is the definition of health?
2. What are the drawbacks of this definition?
3. How can we define health?
4. Can you prove by some examples that there is a wide variable area between health and disease?
5. Are health and physical condition synonymous terms?
6. What is the other problem in settling upon a definition of human health?
7. What is the best way to define health?
8. What kind of tests does health examination include?
9. Are there any difficulties in the interpretation of test results?

Key to I. 1. allergy; 2. influenza; 3. resistant; 4. imminent; 5. malfunction; 6. abnormal; 7. to succumb; 8. to cope; 9. variable.

Text 2. Medicine

Pre-reading task. 1. Look through the following words paying attention to pronunciation, if necessary look them up in the dictionary. When reading the text write down the information about the characteristics of health services and about the levels of health care (note all the names of different levels).
maintenance, alleviation, reaffirm, attainment, infirmity , ensure, interrelated, domain, pyramidal, tier, sophistication, province, cater for, diminish, available, trend, evolve (from/out of; into), appropriate (to, for), expenditure, amenities.

disorder - *a brain disorder, a digestive, intestinal disorder, a mental disorder, a minor disorder, a neurotic disorder, a personality disorder, a respiratory disorder.*

2. Find synonyms to the following words: *infirmity; domain; province; cater for; available; evolve; alleviation*. Use these words in the sentences of your own.

Medicine - the practice concerned with the maintenance of health and the prevention, alleviation, or cure of disease. (Encyclopaedia Britannica)

The World Health Organization at its 1978 international conference held in the Soviet Union produced the Alma-Ata Health Declaration, which was designed to serve governments as a basis for *planning health care* that would reach people at all levels of society. The declaration reaffirmed that "health, which is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, is a fundamental human right and that the attainment of the highest possible level of health is a most important world-wide social goal and its realization requires the action of many other social and economic sectors in addition to the health sector." In its widest form the practice of medicine, that is to say the promotion and care of health, is concerned with this ideal.

Organization of health services

It is generally the goal of most countries to have their health services organized in such a way to ensure that individuals, families, and communities obtain the maximum benefit from current knowledge and technology available for the promotion, maintenance, and restoration of health. In order to play their part in this process, governments and other agencies are faced with numerous tasks, including the following: (1) they must obtain as much information as is possible on the size, extent, and urgency of their needs; without accurate information, planning can be misdirected. (2) These needs must then be revised against the resources likely to be available in terms of money, manpower, and materials; developing countries may well require external aid to supplement their own resources. (3) Based on their assessments, countries then need to determine realistic objectives and draw up plans. (4) Finally, a process of evaluation needs to be built into the program; the lack of reliable information and accurate assessment can lead to confusion, waste, and inefficiency.

Health services of any nature reflect a number of interrelated characteristics, among which the most obvious, but not necessarily the most important from a national point of view, is the curative function; that is to say, caring for those already ill. Others include special services that deal with particular groups (such as children or pregnant women) and with specific needs such as *nutrition or immunization*; *preventive services*, the protection of the health both of individuals and of communities; *health education*; and, as mentioned above, the collection and analysis of information.

Levels of health care

In the curative domain there are various forms of medical practice. They may be thought of generally as forming *a pyramidal structure, with three tiers* representing increasing degrees of specialization and technical sophistication but catering to diminishing numbers of patients as they are filtered out of the system at a lower level.

Only those patients who require special attention either for diagnosis or treatment should reach the second (*advisory*) or third (*specialized treatment*) tiers where the cost per item of service becomes increasingly higher. The first level represents *primary health care*, or *first contact care*, at which patients have their initial contact with the health-care system.

Primary health care is an integral part of a country's health maintenance system, of which it forms the largest and most important part. As described in the declaration of Alma-Ata, primary health care should be "based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development." Primary health care in the developed countries is usually the province of a *medically qualified physician*; in the developing countries first contact care is often provided by *nonmedically qualified personnel*.

The vast majority of patients can be fully dealt with at the primary level. Those who cannot are referred to the second tier (*secondary health care, or the referral services*) for the opinion of a consultant with specialized knowledge or for X-ray examinations and special tests. Secondary health care often requires the technology offered by a local or regional hospital. Increasingly, however, the radiological and laboratory services provided by hospitals are available directly to the family doctor, thus improving his service to patients and increasing its range. The third tier of health care, employing specialist services, is offered by institutions such as teaching hospitals and units devoted to the care of particular groups—women, children, patients with mental disorders, and so on. The dramatic differences in the cost of treatment at the various levels is a matter of particular importance in developing countries, where the cost of treatment for patients at the primary health-care level is usually only a small fraction of that at the third level; medical costs at any level in such countries, however, are usually borne by the government.

Ideally, provision of health care at all levels will be available to all patients; such health care may be said to be universal. The well-off, both in relatively wealthy industrialized countries and in the poorer developing world, may be able to get medical attention from sources they prefer and can pay for in the private sector. The vast majority of people in most countries, however, are dependent in various ways upon health services provided by the state, to which they may contribute comparatively little or, in the case of poor countries, nothing at all.

Costs of health care

The costs to national economics of providing health care are considerable and have been growing at a rapidly increasing rate, especially in countries such as the United States, Germany, and Sweden; the rise in Britain has been less rapid. This trend has been the cause of major concerns in both developed and developing countries. Some of this concern is based upon the lack of any consistent evidence to show that more spending on health care produces better health. There is a movement in developing countries to replace the type of organization of health-care services that evolved during European colonial times with some less expensive, and for them, more appropriate, health-care system.

In the industrialized world the growing cost of health services has caused both private and public health-care delivery systems to question current policies and to seek more economical methods of achieving their goals. Despite expenditures, health services are not always used effectively by those who need them, and results can vary widely from community to community. In Britain, for example, between 1951 and 1971 the death rate fell by 24 percent in the wealthier sections of the population but by only half that in the most underprivileged sections of society. The achievement of good health is reliant upon more than just the quality of health care. Health entails such factors as good education, safe working conditions, a favourable environment, amenities in the home, well-integrated social services, and reasonable standards of living.

Comprehension Check.

I. Match the words given below with the definitions.

1. To make certain, to make sure.
2. Any advantage, profit, or helpful effect.
3. Capable of being gotten, obtained, used, seen, etc.
4. Evaluation of the quality or worth of something.
5. To add, to fill up the deficiencies.
6. An area of knowledge or interest.
7. To direct in the wrong way.
8. Interdependent.
9. Striking, thrilling, exciting.
10. To make necessary, to involve.
11. Intended to prevent something, esp. illness.

Words: available, interrelated, assessment, to supplement, entail, dramatic, benefit, misdirect, ensure, preventive, domain.

II. Answer the following questions.

1. How can you define medicine?
2. What definition of health was given in Health Declaration of 1978? Do you agree with this definition? Can you add or change anything in it?
3. In what way are health services organized in most countries?
4. What tasks are governments and other agencies faced with? What is important for determining realistic objectives and draw up efficient plans and programmes?
5. What kinds of health services can you name?
6. What are the three levels of health care? Give all the names of each tier. Why is it formed in a pyramidal structure?
7. Why is primary health care called "the largest and the most important part" of a country's health maintenance system? What should it be based on? Who can provide primary health acre?
8. When are the patients referred to the second tier? What does secondary health care require?
9. What kind of institutions offer specialized treatment?
10. What can you say about costs of treatment at various levels? What trend has been the cause of major concern in developed and developing countries?
11. Which factors is good health reliant upon?

Text 3. The Doctor in the Third World.

Pre-reading task.

What factors are the main causes of disease and death in the Third World? Discuss this in small groups and make a list of factors. Try to put two factors at the top of the list which you think are particularly important. Then read the text and compare your list with the one made by the author.

The most important cause of the disease and death in the Third World is poverty. One quarter of children in poor countries die before they are five years old. They do not die from exotic "tropical diseases" but from trivial illnesses, which become killers in conditions of *overcrowding* and *malnutrition*. A malnourished child cannot *fight infection.* Babies and young children die from diarrhea, influenza, and even common cold. The death rate from measles in Ecuador is 250 times the rate of the United States.

The health policy of any country is a social and political issue. This is particularly true in poor countries. Resources are often spent on a rich minority. In India, 80% of people live in small towns and villages but 80% of doctors work in the big cities. More than half the population has no access to a doctor, many people don't even *have access to* a nurse or *community health worker*. Less than 10% of the population has basic *amenities* like clean running water and proper *sewage systems*. Yet many Indian cities have sophisticated, modern hospitals where doctors perform kidney transplants and open heart surgery.

Drugs and medicines are "big business" in developing countries. Even in villages where there is no doctor, there is usually a pharmacy. People can often buy drugs *over the counter* – that is, without doctor's prescription. They buy *antibiotics*, *strong painkillers*, vitamin pills and "tonics". The patients usually can't read, and the instructions are often written in a foreign language. People waste their money on useless drugs when they really need good food, better housing, and clean water. Vitamin pills will not help a child with malnutrition. He needs rice, fresh vegetables, and milk.

No doctor can *provide a cure* for the diseases of poverty. It's very frustrating to treat a baby with *severe diarrhea*, and then see the same baby get the same disease a month later because his family has no clean water supply. Perhaps that's why so many doctors in developing countries

want to work in modern hospitals treating rich people. Some doctors, however, choose to work for much lower wages in the rural areas. They do the best they can in impossible situations. Others choose to become involved in politics, and *put pressure on their government* to spend money on public health projects and *food subsides*.

If poverty is the first cause of death in the Third World, ignorance is the second. In some parts of India, up to 70% of deaths in *newborn babies* are caused by *tetanus*. This is because there is a tradition of putting cow dung on the cut ends of *umbilical cord*. The cow is a sacred animal in the Hindu religion; people think that cow dung will bring good luck. They do not know that it contains bacteria, which cause tetanus. Another example of death caused partly by ignorance is the belief that a mother should have as many children as possible to make sure that one or two survive. In all countries, the baby is much more likely to die if he is born very soon after the previous baby. If women knew this fact and if *contraceptives* were *freely available*, many women would choose to have fewer babies at longer intervals.

The most common cause of *infant deaths* in poor countries is *dehydration*, which is usually caused by diarrhea. Mothers usually spend money on pills and medicines which they think would stop the diarrhea. But the correct treatment of infant diarrhea is *rehydration* – that is, replacing the fluids and salts which have been lost. A drink made from clean water, sugar, and little salt can save a child's life. The sugar helps the body to absorb the water and the salt. This principle of *oral rehydration therapy* has probably saved more lives throughout the world in the past 30 years than any single drug or operation. Sadly, the doctors often give the patient "antidiarrhea medicine" instead of this therapy. The medicine won't work unless the patient gets oral rehydration therapy as well.

In the past, governments and charities in richer countries tried to provide better health care for the people in poor countries. They sent doctors and nurses and built large, modern health clinics. But often, local people didn't come to the clinic because it seemed foreign. Doctors who come to poor rural communities often cannot understand the culture and the traditions of the people there. In carrying out the health care projects in developing countries local people must be involved in planning and making the changes to health care system. Instead of providing foreign doctors and expensive new buildings, charities should spend money on educating and training the local people.

Since 1980, a lot of foreign aid has been spent on such projects. In many poor, rural communities, local women (who were illiterate before) have trained as *community health workers*. They have learnt the *basic principles of health and hygiene,* and how to use a few simple drugs such as aspirin and penicillin. They have also learnt about health education, so that they can *pass on their knowledge* to the community. They can often give better medical care to the local people than highly trained foreign doctors and nurses because they know the traditions and fears, and the diseases which occur in their community.

Community health workers have helped with *immunization campaigns*. An injection which prevents the disease is a strange concept, and many people refused immunization when they were done by foreign doctors. But when the health workers from the community taught the people immunizations were safe and effective, the people usually accepted them. The World Health Organization *eradicated* smallpox in the 1970s by an intensive worldwide immunization campaign. It is now organizing immunization campaigns against *tuberculosis, cholera, diphtheria, measles, whooping cough* and *polio*.

People usually die of *preventable diseases*. The major killer diseases in the Third World today are the same diseases which killed poor people in developed countries 200 years ago – for example tuberculosis and cholera. These diseases are now rare in developed countries because of a rise in the general standard of living, basic amenities such as clean water and sewage systems, better public health education and widespread immunization. The individual doctor in the Third World often struggles to provide healthcare in an unhealthy environment to patients who are weak from malnutrition. Neither drugs nor hospitals will cure the diseases of poverty; they often simply *divert scarce resources away from* the rural poor and towards the urban rich.

Governments in developing countries, and organizations who want to improve health care for the world's poor, should spend their money on providing basic amenities, educating local people, training community health workers and immunizing the population.

Comprehension Check.

1. Look at the words in italics. Read them paying attention to pronunciation and explain their meaning. Pick out the names of the diseases and put them down into your note-books. Decide which paragraph best summarizes the content. Discuss the question with your partner.

2. Insert the necessary prepositions into the gaps.

People usually die … preventable diseases. The major killer diseases … the Third World today are the same diseases which killed poor people … developed countries 200 years ago – for example tuberculosis and cholera. These diseases are now rare … developed countries because of a rise … the general standard of living, basic amenities such as clean water and sewage systems, better public health education and widespread immunization. The individual doctor … the Third World often struggles to provide healthcare … an unhealthy environment … patients who are weak … malnutrition. Neither drugs nor hospitals will cure the diseases … poverty; they often simply divert scarce resources ... the rural poor and … the urban rich. Governments … developing countries, and organizations who want to improve health care … the world's poor, should spend their money … providing basic amenities, educating local people, training community health workers and immunizing the population.

3. Look at the following definitions and try to find the word for them in each paragraph.

1) too many people in one place
2) matter of question
3) the doctor writes this for his patients
4) very bad
5) obtainable, easy to get
6) unfortunately
7) give or supply
8) not able to read or write
9) something that works well
10) not many, not enough

4. Answer the following questions.

1) What percentage of Indian doctors work in towns, villages and rural areas?
2) How do people often buy drugs in developing countries?
3) How effective are drugs in developing countries?
4) What are the two main causes of illness and deaths in the Third World?
5) How should infant diarrhea be treated and why?
6) How has most foreign aid been spent since 1980? Why?
7) When did smallpox cease to exist?
8) What should Third World governments do to improve the health of poor people?

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5. Read the following words and phrases once again, check the pronunciation if necessary and make a summary of the text using them:

overcrowding and malnutrition, weak from malnutrition, fight infection, have access to/ no access, amenities, sewage systems, perform transplants and open heart surgery, over the counter waste money on, to spend money on, provide a cure for the disease, food subsides, ignorance, illiterate, cow dung, umbilical cord, freely available, dehydration, rehydration, oral rehydration therapy, carry out health care projects, be involved in, basic principles of health and hygiene,*

penicillin, pass on their knowledge, immunization campaigns, to carry out a (mass) immunization against, eradicate, die of preventable diseases, divert(from; onto/to)
The names of diseases: tetanus, severe diarrhea, whooping cough (Syn: hooping-cough, pertussis)

* to practice (good) hygiene — поддерживать гигиену dental hygiene — гигиена ротовой полости feminine hygiene — женская гигиена field hygiene — полевая гигиена industrial hygiene — производственная гигиена personal hygiene — личная гигиена sexual hygiene — сексуальная гигиена social hygiene — общественная гигиена

Text 4. Alternative Medicine

Pre-reading task: 1. Look through the list of the words given below. Put down all the medical terms into your vocabularies and find their pronunciation and meanings in the dictionary.

complementary medicine naturopathy prayer shamanism therapeutic touch pharmacopoeia medicinal (plant) efficacious remedy Syn: efficient, effectual potent snail larva genera – genus tumeric indigenous	mainstream non- mainstream UNICEF - United Nations International Children's Emergency Fund reimburse allocate (to) social security cost-effective patenting clearance assume irreplaceable eczema psoriasis

2. Reading the article fill in the following table with the facts you find in the article.

The name of the country	Traditional therapies	Drugs from traditional medicine. Research into traditional medicine	The role of alternative medicine in the country

Alternative and complementary medicine covers a broad range of healing philosophies, approaches, and therapies. The Office of Alternative Medicine (OAM) at the U.S. National Institutes of Health (NIH) defines alternative and complementary medicine as "those treatments and health care practices not taught widely in medical schools, not generally used in hospitals, and not usually reimbursed by medical insurance companies." Many of these therapies are *holistic*, which means that the health care practitioner considers the whole person, including his or her physical, mental, emotional, and spiritual characteristics. Many treatments are also preventive, the practitioner educating and treating the person to prevent health problems from arising rather than treating the patient after disease has already occurred. Some of the commonly used alternative and complementary therapies are acupuncture, Ayurveda, chiropractic, herbal medicine, homeopathy, massage, meditation, naturopathy, prayer, shamanism, therapeutic touch, and yoga.

It is important to note that for large portions of the world's population, *nonmainstream approaches* to medicine are neither alternative nor complementary. Traditional health care systems constitute the main source of everyday health care for up to 80% of the population of

most of the less-developed countries, according to the World Health Organization (WHO). They are also used by ethnic and indigenous populations in industrial countries, such as the U.S., Canada, and Australia. The ratio of traditional health practitioners to population in many places is substantially higher than the ratio of medical personnel trained in *mainstream medicine* to population and thus represents an irreplaceable health care infrastructure.

International.

WHO recently produced reports on training for traditional birth attendants and on evaluating herbal medicines. Its Collaborating Centre for Drug Monitoring announced a new technology for patenting, testing, and approving medicinal plants. While maintaining an official interest in traditional medicine, WHO, however, progressively reduced funding for this sector, and other agencies assumed increased responsibility for work in this field. In 1996 and 1997, for example, the World Bank issued reports on medicinal plants, drawing attention to the need to conserve and cultivate these plants in order to ensure a supply for the $800 billion-per-year medicinal plant market.

In 1996 the Global Initiative for Traditional Systems (GIFTS) of Health, a nongovernmental network of traditional medicine research-and-development programs, produced a report on policy in traditional health care. Headquartered in Oxford, Eng., GIFTS recommended formal collaboration between modern and traditional medical sectors. It called for a framework (and adequate budgetary support) for legal recognition of traditional health practitioners and for officially supported training in traditional medicine.

Asia.

In India the government became involved in traditional drug production when the Central Drug Research Institute patented two new drugs from ancient Ayurvedic formulas. One, a mixture of black pepper, long pepper, and ginger, allows for the dosage of the antibiotic rifampicin to be halved in the treatment of tuberculosis and other *mycobacterial infections*. The other is a memory tonic produced from the traditional plant called brahmi. Overseas patenting of turmeric and products of the neem tree caused controversy in India and other nations. In August the U.S. Patent and Trademark Office canceled a U.S. patent on the wound-healing properties of turmeric when the Indian government proved that records had existed for this use for centuries.

Researchers in Thailand and Vietnam reported in the medical journal The Lancet in 1996 that artemether, a plant extract from Artemisia annua used in Chinese medicine, is effective in treating *cerebral malaria*. Vietnamese researchers, working in collaboration with colleagues at the University of Oxford, found that traditional Vietnamese treatments for burns and wounds are effective in stimulating tissue growth and reducing scar tissue.

In China, where there is full state support for traditional medicine, almost half of the population uses it on a regular basis. Chinese methods of preventing and treating *cardiovascular conditions, cancer, burns,* and *psoriasis* have all been found to be effective in recent studies conducted in China and internationally.

Africa.

In many countries of Africa, 80-90% of the people use traditional medicine, often as their only method of health care. A recent study by the African Development Bank and UNICEF found that economic factors, such as devaluation of currencies, result in a substantial shift from modern to traditional medicine, even in urban populations.

In Uganda the government introduced a policy in support of traditional medicine. A group of modern and traditional health practitioners began working together to combat the AIDS epidemic by using herbal remedies to treat *opportunistic infections* associated with AIDS and by providing culturally relevant emotional support to people with AIDS. In Zambia and Mozambique training courses for traditional healers increased the effectiveness of the AIDS-

prevention message being delivered to local communities. Also during the year the new University of the Health Sciences in Tanzania introduced a course in traditional medicine.

Studies in both Ethiopia and Uganda of the plant Phytolacca dodecandra found it effective against the snails and larvae that carry schistosomiasis, as well as in controlling larvae of the black fly that carries onchocerciasis. A 1997 issue of the Royal Society of Medicine journal Tropical Doctor presented evidence from Uganda of clearance of parasitemia with a local herbal antimalarial mixture.

South and Central America.

The Pan-American Health Organization, in a set of guidelines for research with indigenous populations, emphasized the importance of developing research into traditional medicine. A study of the understanding and treatment of *gastrointestinal disorders* among the Maya of Chiapas state, Mex., presented evidence of the scientific bases of the Maya's large pharmacopoeia of local herbal medicines. Faced with a severe malaria epidemic, the Yanomami Indians of northern Brazil identified 82 genera of plants in different parts of their region useful for combating the disease. Antimalarial activity was shown to be linked to a range of compounds, and the plants used by the Yanomami were demonstrated to contain these compounds.

Industrialized Countries.

The growth of alternative medicine in the industrialized countries has resulted almost entirely from the efforts of consumers. The Lannoye Report to the European Parliament (1997) revealed that in countries where statistics are available, 20-50% of the population of European countries uses alternative forms of health care.

Current legislation within the European Union is varied. In France a tolerant attitude exists; acupuncture has been recognized by the Academie de Medicine since 1950, and homeopathic remedies are reimbursed by social security when medically prescribed. The northern countries--Great Britain, Ireland, The Netherlands, Germany, Denmark, and Sweden--have taken a more restrictive position. Although most allow the practice of health care by complementary practitioners, certain activities are reserved for doctors, and policy and supervision of complementary medicine rest in the hands of the biomedical profession.

Clinical research in London revealed that Chinese herbal medicine is an effective means of controlling *atopic eczema*. The National Health Service programs in Great Britain offer some forms of complementary medicine, such as homeopathy and acupuncture. The Glasgow (Scot.) Homeopathic Hospital established an international data collection network that began collecting information from general practitioners who are using homeopathic remedies. Based on a sample of more than 1,000 cases, the International Data Collection Centres for Integrative Medicine network found that 7 out of 10 patients using homeopathic remedies reported moderate improvement in their condition.

U.S. funding for research on alternative/complementary therapies is increasingly being supplied by the OAM at the NIH. Established by a mandate of Congress in 1992, the OAM awarded grants to six U.S. universities for the study of complementary medicine in relation to cancer, heart disease, women's health, AIDS, pain control, and general medicine. In 1997 Congress *allocated $12 million to* the OAM, as compared with $7.4 million in 1996.

Because health care in the U.S. is overwhelmingly centred on employer-provided health plans or insurance, it is significant that medical insurance companies in the U.S. have begun to offer coverage for complementary medicine. In January Oxford Health Plans, Inc., of Norwalk, Conn., announced an alternative medicine program that offers patients a network of qualified providers for chiropractic, acupuncture, yoga, massage therapy, and nutrition information. Since 1995 more than one-third of Oxford's 1.8 million members have chosen alternative medical services either alone or *in conjunction with* conventional medical treatments. Another major American insurer, Mutual of Omaha Companies, began offering coverage for a cardiovascular program that

combines a low-fat vegetarian diet; mild exercise, including yoga; and a regime of stress reduction that employs a form of meditation.

U.S. researchers have investigated traditional *herbal antioxidants*. Studies on a herbal mixture called Maharishi Amrit Kalash from the Maharishi Vedic Approach to Health found it to be an exceptionally *potent* antioxidant. Other research on this mixture revealed it to have marked *anticancer effects* and to decrease experimental *atherosclerosis*.

In a study on Canadians using a stress-reduction program, *transcendental meditation* (TM), it was found that in a period of up to seven years, government payments to physicians for those patients declined significantly, at a rate of 5-7% annually, as compared with their pre-TM rates. Another study found TM to be efficacious in treating *hypertension*.

Medical education in the U.S. is beginning to reflect changes in patients' choices of health care. By 1997 more than 30 American medical schools were offering courses in complementary medicine.

Conclusion.

Although doubts and opposition remain, it seems *inevitable* that the momentum of research into traditional, alternative, and complementary health care will continue. While some approaches will likely be found useless or even harmful, others will no doubt be proved effective. They may offer advantages to mainstream medicine by providing treatments in areas where conventional medical approaches have not been successful (such as treatment of *chronic disorders*), by offering therapies that are *cost-effective* and free of toxic *side effects*, and by suggesting new directions for *an integrated approach to health care*.

Comprehension Check.

I. Explain the following abbreviations: OAM; NIH; TM; WHO; GIFT.

II. Answer the following questions.

1. What is alternative or complementary medicine?
2. Explain the expression “holistic approach”.
3. Name some of the alternative therapies. Have you ever tried any of them? Would you consider trying any of them? Why? Why not?
4. What is the role of alternative medicine in developing countries? Why?
5. What do you know about the funding of this sector?
6. When did the government of India become involved in traditional drug production?
7. Where do they have full state support for traditional medicine?
8. What’s the ratio of traditional medicine in Africa?
9. What is the reason for substantial shift from modern to traditional medicine even in urban population there?
10. How do health practitioners in Uganda try to combat the AIDS epidemic? What do you know about other African countries?
11. Which diseases are treated by herbal medicine in South and Central America?
12. What is the ratio of alternative medicine in European countries?
13. What is the attitude of governmental institutions towards traditional medicine there?
14. Which forms of traditional medicine are offered by the National Health Service programs in Great Britain?
15. What do you know about the activities of OAM of NIH in the United States?
16. Why is it so important that medical insurance companies in the U.S. have begun to offer coverage for complementary medicine?
17. What have you learnt about the U.S. research of traditional herbal antioxidants?
18. In what cases is TM found to be efficacious?
19. Where have traditional approaches proved effective and offer advantages to mainstream medicine?

Writing. Task for texts 1-4. Write a summary "Organisation of health care (medical services) in different countries" (about 350-450 words) based on the material of these 4 texts. Reveal the structure of health care services and different types of treatments. Speak about differences between developed and developing countries.

Choosing Medical Profession.

I. Discuss the following questions with your partner and then report back to the class about what you have found out.

1. Why have you chosen the profession of a doctor?
2. Are any members of your family connected with medical profession? If yes, have they influenced your choice?
3. Is it important to have vocation for this profession?
4. What characteristics are most important if you want to be a good doctor? Do you have such characteristics?
5. Are there any 'contraindications' for this profession?

Answering the last 2 questions you can choose from the following list of characteristics:

hard-working stubborn self-confident kind (un)reliable sensitive modest ambitious thoughtful* open-minded sensible lazy talented narrow-minded insensitive arrogant insecure sociable

*thoughtful = paying attention to the feelings of other people
Think of some more characteristics which are necessary for a good doctor.

II. You are going to read a text about medical education in Great Britain.
Pre-reading task. Think about the system of medical education in our country. Do medical studies differ from the other spheres of higher education? In what way? How long does it take to become a real doctor? Draw a scheme of the system of medical education in Russia. While reading the text find similarities and differences between the systems of medical education in Russia and in Great Britain.

Text 5. Oxford Medical School.

Oxford medical course consists of a three-year *pre-clinical course*, leading to an Honours degree, followed by a three-year *clinical course*, leading to the degrees of BM, BCh. The pre-clinical course encourages applicants from a wide range of backgrounds including school-leavers, graduates and mature students and those who have studied Arts subjects. Applicants to the clinical course must have studied the medical sciences for not less than two years and hold an approved Honours degree. The pre-clinical and clinical courses have *separate admission procedures*.

Oxford medical course of six years is separated broadly into pre-clinical and clinical courses. Who makes a good doctor? Clearly someone who communicates well, *empathises with* patients and exercises sound clinical judgment. But a doctor should also understand the basic mechanisms of disease, be able to test hypotheses and show curiosity and a capacity for self-directed learning. Teaching reinforces these scientific principles and an Oxford doctor is trained to be a good scientist as well as a good clinician and a clear thinker. Medical sciences are taught in years 1 and 2 of the pre-clinical course when students are also *introduced to some clinical issues* in the context of biomedical sciences and medical sociology. Students are expected to have a sound knowledge of the science underlying all aspects of disease and treatment before entering the clinical school; this foundation not only gives students a good understanding of clinical practice, but also prepares them effectively to cope with future developments in treatment and diagnosis.

In year 3 of the pre-clinical course all Oxford medical students, except those who are already

graduates, study for an Honours degree most usually in Physiological Sciences before starting clinical studies. The last three years of the medical course are open to Honours graduates with a suitable pre-clinical qualification from any medical school. Entrance is competitive. More than half of students in the clinical course come from Oxford with the balance from Cambridge, London and other medical schools.

Basic science and the practice of evidence-based healthcare underpin clinical training. The course emphasises *self-directed learning* and evaluation of the literature: students are expected to be competent in information skills, so that they will be equipped to evaluate advances in medical practice throughout their professional careers. In year 4 (year 1 of the clinical course) a 6-week foundation course teaches students the skills needed to communicate with patients, *obtain a medical history*, examine the principal systems and *perform simple procedures*. In addition to 8-week *medical and surgical attachments* in the teaching hospitals, students work with GPs in the community and also spend time in district general hospitals (Swindon, Reading, and Northampton). The major clinical specialties are introduced in year 5 (year 2 of the clinical course). The final year of the medical course is geared towards a preparation for the *house officer* and students are given the opportunity to spend 6-weeks in a district general hospital shadowing House Officers. Learning is self-directed and opportunities are provided to pursue areas of special interest.

A distinguishing feature of the course is the use of *staged assessment* rather than one final examination at the end of the year. Each stage within the year must be passed before the student can progress to the next year. A written curriculum and course handbooks ensure that students understand what they will be expected to know for each assessment. The 2nd BM examination in the final year leads to the degrees of Bachelor of Medicine and Bachelor of Surgery and now the student is ready for the duties of a *pre-registration house officer*.

Clinical students are an integral part of the clinical team: students clerk patients *on the wards* and *follow patients from admission to discharge*. On *ward rounds*, students may be expected to present their patients to the rest of the clinical team. In addition students may be required to *present a review of the medical literature* relevant to their patients' illnesses: therefore students understand both the clinical management of their own patients and the relevant clinical research. During most of the clinical course, students are assigned academic tutors who provide *bedside-teaching* and small-group teaching supplements tutorial support.

Community-based teaching is an important part of the course. There is early contact with a general practitioner in the two-week attachment in year 4 (year 1 of the clinical course), which involves a mixture of city and rural general practices. The School has a number of committed GP tutors who teach and assess students.

Opportunities for self-directed study outside the core are provided throughout the course. Students are encouraged to pursue interests ranging from philosophy, theology or ethics to mathematics, management or global health. There are also opportunities to sample medical research in both years 4 and 6 when time may be devoted to a single project. The 14-week modular programme in year 6 allows students to select up to 7 modules from a broad range of clinical and scientific options. The student also chooses the topic and supervisor for the 3000-word essay. The *elective period* (10 weeks) in the final year is longer than in many schools.

New developments in Oxford postgraduate medical education are also beginning to influence the undergraduate curriculum, so that the clinical course is seen increasingly as the first part of a continuing education. This combination of scientific and clinical education, with its emphasis on skills that will enable students *to keep up with the latest ideas* in medical practice throughout their professional careers, makes the Oxford course an exciting and attractive prospect.

Oxford is very well provided with student accommodation and teaching facilities in all its hospitals. Seminar rooms and lecture rooms are provided throughout the main hospitals; there are computers for student use in most seminar rooms and on the wards. A separate computer

room for student use is available in the main library of the John Radcliffe Hospital. All computers are connected to the School's collection of teaching software and *electronic databases of medical and related literature*, so that students can search the medical literature while on the wards; this practice encourages students *to keep up to date with the latest research* in all aspects of medicine, including the latest data on the best treatments for particular disorders. It is a central feature of the Oxford course that students should develop the skills needed to keep in touch with the latest medical research throughout their careers, and should try to base their clinical practice on research evidence rather than tradition; wide access to computerized databases is an important provision for this objective. In addition to the hospital computers and libraries, clinical students have access to the extensive University computing and library facilities, as well as to the facilities in their own college.

For clinical skills training, a skills laboratory allows students *to practice manual skills* (such as *venous cannulation* and *lumbar puncture*) *on mannequins*, so that they reach high standards of competence and confidence before using their skills *at the bedside*. The laboratory is used for formal teaching sessions during the medical and surgical attachments.

Comprehension Check

1. Pay attention to the following words and word combinations, check their meaning in the dictionary if necessary. Make sentences of your own with some of them:
empathize with smb, to introduce smb to smth, to underpin, to gear (to) , medical and surgical attachments, obtain a medical history, perform simple procedures, to assign, to sample, lumbar, at bedside, on the ward, to keep up to date with smth, to keep up with smth, follow patients from admission to discharge, separate admission procedures.
2. Answer the following questions:
   1. What's the duration of Medical studies at Oxford University?
   2. Find a characteristic of a good doctor? What must he know? Is this similar to the characteristic you gave before reading the text?
   3. What are students supposed to know when entering the clinical course?
   4. What do they study during the pre-clinical course?
   5. Who can be admitted to the clinical course?
   6. What are the students taught in year 4?
   7. Who do the students work together with?
   8. When are the major clinical specialities introduced?
   9. What is the final year of medical studies geared towards?
   10. What do you know about the stage assessment?
   11. What duties is the student ready for after the final year?
   12. What do you know about the system of tuition in the colleges? Who controls the students' progress?
   13. How do you understand the following words: the students are an integral part of the clinical team?
   14. What do you know about the community-based teaching?
   15. Are there any optional studies? Do they have to write an essay?
   16. What makes it possible for the students to keep up with the latest ideas in medical practice?

3. Write a 300-words summary comparing the systems of medical education in Russia and in Great Britain.

Part II. Urgent Medical Problems.

CANCER.

Text 1. Overview.

Pre-reading task. 1. Read the following words and expressions, consult the dictionary if necessary or try to guess the meaning:

tissue neoplasm tumor abnormal cell carcinogen carcinogenesis epithelial tissue enzyme *malignant* malignancy *benign* *m*utation life-threatening screening discharge thickening (lump) blood / urine sample s*arcomas* *carcinoma* *leukemia* *lymphoma* surgery radiation chemotherapy hormone therapy combined modality therapy gene therapy immunotherapy

to contract a virus *to be exposed to* *to* trigger the body's immune system to differentiate to *suppress* *to predispose to smth* *to invade* *to destroy*

breast colon prostate retina bowel bladder wart mole abdomen testicles cervix uterus lymph nodes rectum spleen bone marrow

2. Discuss the questions using the words given above:

1. What do you know about cancer?
2. What organs can be the sites for malignant tumors?
3. What types of cancer do you know?
4. What are the methods of treatment?

3. Now read the text and check your answers.

Cancer - new growth of tissue resulting from the continuous and rapid production of abnormal cells that invade and destroy other tissues.

Cancer, which may arise from any type of cell in any body tissue, is not a single disease but includes a large number of diseases *classified according to the tissue and type of cell* in which new growth occurs. Several hundreds such classes exist, constituting three major subtypes:

Sarcomas arise from *connective and supportive tissue* such as bone, cartilage, nerve, blood vessel, muscle, and fat.

Carcinomas**,** which include the most frequently occurring forms of human cancer, arise from *epithelial tissue* such as the skin, the lining of body cavities and organs, and the *glandular tissue* of the breast and prostate. Carcinomas with a structure resembling skin are termed *squamous cell carcinomas*. Those that resemble glandular tissue are called a*denocarcinomas*.

Leukemias and ***lymphomas*** include the cancers that involve *blood-forming* tissue and are classified by the *enlargement of lymph nodes*, the invasion into the spleen and bone marrow, and the overproduction of immature white cells.

A cancerous growth, or neoplasm, is clonal—that is, all its cells are descendants of a single cell. These cells escape the control of normal forces that regulate cell growth by using an enzyme called telomerase, which allows malignant cells *to reproduce endlessly*. Malignant cells are unable to differentiate or mature into an adult, functioning state. As these cells *multiply*, they may form a mass called a tumor, which enlarges and continues to grow without regard to the function of the tissue in which it originated.

Almost all cancers form tumors, but not all tumors are cancerous, or *malignant*; the greatest number is *benign*, or non-life-threatening. Benign tumors grow only in the tissue in which they originate and are usually separated from neighboring tissue by a surrounding capsule, or *sac.* Benign tumors generally grow slowly and in structure closely resemble the tissue in which they first grew.

Cancer is basically a genetic process. *Gene abnormalities* can be *inherited*, or produced in a cell by a virus or by damage from an outside source. New studies indicate that some individuals

are more likely to develop cancer if they lack or have a defective copy of a particular gene, known as *p53* that *suppresses the growth* of abnormal cells. This gene appears to affect cancer-causing activity in several types of tumors, including those of the brain, breast, prostate, and kidney. Mutations of two genes, called BRCA1 and BRCA2, are responsible for about 90 percent of familial breast cancers. Researchers suspect that the two genes may also play a role in breast cancer cases that occur in women with no family history of the disease. Cancer of the colon is more common in families whose members have a history of polyps in the colon. A type of retinoblastoma (a malignant tumor of the retina of the eye) occurs only when a specific gene is absent. A genetic abnormality that weakens the body's defenses against carcinogens has been linked to prostate cancer.

Cancer may be caused by a number of factors. These include inheriting a gene that *predisposes* an individual to a particular type of cancer, *contracting a virus* that causes a specific form of cancer, or *being exposed to certain types of radiation* and particular chemicals that cause cancer. Changes in the immune system and exposure to certain environmental factors can also cause cancer. Researchers study how these various factors interact to cause malignancy. Early diagnosis of cancers not susceptible to screening depends upon recognition of early signs of disease by the patient. There are seven classic danger signals of cancer:

Change in bowel or bladder habits
A sore that does not heal
Unusual bleeding or discharge
Thickening or lump in breast or elsewhere
Indigestion or difficulty in swallowing
Obvious change in a wart or mole
Nagging cough or hoarseness.

A diagnosis of cancer begins with a thorough history and physical examination, including inspection, both visually and manually, of all accessible areas of the body, especially the skin, neck, breasts, abdomen, testicles, and the areas that contain lymph nodes. It specifically includes examination of body openings, particularly rectal examination for cancers of the rectum or prostate and pelvic examination for cancers of the cervix or uterus.

Over the past several years, a variety of new diagnostic tests have been developed to detect the presence of cancer using only a small *sample of blood or urine*. These include tests for prostate and bladder cancer.

Tests that identify genes believed to cause certain cancers—such as breast cancer—are also now available.

The traditional methods for treating cancer have been surgery, radiation, and chemotherapy. More recent treatment options include hormone therapy, combined modality therapy (in which several types of treatment are used together), and biologic therapies such as immunotherapy, which triggers the body's immune system to attack cancerous cells. Gene therapy shows promise as an effective future cancer treatment.

Text 2. Carcinogenesis

Task: while reading the text make a list of factors causing cancer in your notebooks.

What Causes Cancer?

The process of transformation from a normal cell to a cancerous one (carcinogenesis) is only partially understood at the present time. What is clear is that malignant transformation results from damage to the genetic material, or **DNA (deoxyribonucleic acid**), of the cell. *Strands* of DNA in the cell nucleus form **chromosomes**, which become readily visible under a microscope when a cell is preparing to produce daughter cells. In order to understand what causes cancer, it is necessary to learn more about DNA and its functions in a normal cell.

DNA has two main functions in a normal cell. First, DNA controls the production of new cells (cell division). When a cell divides, the DNA material in each chromosome copies itself, so that exactly the same DNA is passed to the two new daughter cells that are formed. This process of cell division is called **mitosis**.

Second, between cycles of mitosis, DNA controls the production of new proteins (protein synthesis) in the cell. DNA contains about 100,000 separate and distinct codes or programs called *genes* that direct the process of protein synthesis. DNA (as coded genes) sends a molecular message outside the nucleus to the cytoplasm of the cell directing the synthesis of specific proteins (such as *hormones* and enzymes) essential for normal cell function and growth. This message is transmitted in the following way. In the nucleus, the coded message with instructions for making a specific protein is copied from DNA onto another molecule called **RNA (ribonucleic acid**). Then RNA travels from the nucleus to the *cytoplasm* of the cell, carrying the coded message to direct the formation of specific proteins.

When a cell becomes malignant, however, the processes of mitosis and protein synthesis are disturbed. Cancer cells reproduce almost continuously and abnormal proteins are made. Malignant cells are *anaplastic*; that is, their DNA stops making codes that allow the cells to carry on their normal function. Instead altered DNA and altered cellular programs make new signals that lead to movement of cells, invasion of *adjacent* tissue, and *metastasis*.

The damage to DNA that results in malignancy may be caused by environmental factors, such as toxic chemicals, sunlight, tobacco smoke, and viruses Once these changes are established in a cell, they are passed on to daughter cells. Such an inheritable change in DNA is called a **mutation**. Mutations, particularly those that affect cell growth or DNA repair, lead to malignant growths.

Although most DNA changes, or mutations, lead to higher-than-normal rates of growth, some mutations found in cancer cells actually prevent the cells from dying. In recent years, scientists have recognized that some types of cancers have lost the normal blueprints that direct aging or damaged cells to die. Normal cells undergo spontaneous disintegration by a process known as **apoptosis**, or programmed cell death. Some cancer cells have lost elements of this program and thus can live indefinitely.

Environmental Agents

Agents from the environment, such as chemicals, drugs, tobacco smoke, radiation and viruses, can cause damage to DNA and thus produce cancer. These environmental agents are called **carcinogens**.

Chemical carcinogens are found in a variety of products and drugs including **hydrocarbons** (in cigarette, cigar, and pipe smoke and automobile exhaust), insecticides, dyes, industrial chemicals, insulation, and hormones. For example, the hormone diethylstilbestrol (DES) causes a malignant tumor, carcinoma of the vagina, in daughters of women treated with DES during pregnancy. Drugs such as estrogens can cause cancer by stimulating the proliferation of cells in target organs such as the lining of the uterus.

Radiation, whatever its source - sunlight, X-rays, radioactive substances, nuclear fission - is a wave of energy. When this energy interacts with DNA, it causes DNA damage and mutations that lead to cancer. Thus, leukemia (a cancerous condition of white blood cells) may be an *occupational hazard* of radiologists, who are routinely exposed to X-rays. There is a high *incidence* of leukemia and other cancers among survivors of atomic bomb explosions, as at Hiroshima and Nagasaki. Ultraviolet radiation given off by the sun can cause skin cancer, especially in people with lightly pigmented, or fair skin.

Some **viruses** are carcinogenic. For example, the human T-cell leukemia virus (HTLV) causes a form of leukemia in adults. A related virus, HIV (human immunodeficiency virus), causes a tumor (Kaposi sarcoma) associated with AIDS. Other viruses are known to cause cervical cancer (papilloma virus) and a tumor of lymph nodes called Burkitt lymphoma (Epstein-Barr virus).

These tumor-producing viruses, called **oncogenic viruses**, fall into two categories: **RNA viruses** (composed of RNA and known as retroviruses) and **DNA viruses** (composed of DNA).

In addition to transmission of cancer by whole viruses, pieces of DNA called **oncogenes** can cause normal cells to become malignant if they are activated by mutations An oncogene (cancer-causing gene) is a piece of DNA whose activation is associated with the conversion of a normal cell into a cancerous cell.

Task: 1. Look at the italicized words, find their pronunciation. (Pay attention to the shift of the stress in some word families: carcinogen- carcinogenic – carcinogenesis). Explain the meaning of these words.
2. Translate the part of the text starting from the following words: “DNA has two main functions in a normal cell” up to the beginning of the next part “Environmental Agents”.

Text 3. Cancer treatment

While reading the text about chemotherapy fill in the table.

Treatment	Side effects	Ways to relieve discomfort

Chemotherapy for Patients: Introductory Information

Many cancer patients will receive chemotherapy sometime during the course of their disease. The goal of chemotherapy is to destroy cancer cells. The decision *to administer* chemotherapy is made based on its potential for destroying these cells, which is weighed against the risk of *side effects* from treatment as well as the risk of not receiving treatment at all. The side effects of treatment can sometimes be unpleasant, but most are temporary and subside once treatment is completed. Your physician will discuss these issues with you and involve you in the decision process.

General Issues

Administration

Chemotherapy is administered in a variety of ways, including by mouth, *intravenously* and/or *intramuscularly.* The route depends on the specific chemotherapy agent, as well as other patient and disease factors. This includes information concerning *implanted catheters* and ports that make administration easier and more comfortable for the patient.

Schedule

The schedule for chemotherapy treatments also varies according to the agent(s) used, the disease, and other factors. Frequently, chemotherapy is administered in 1-2 day cycles that are repeated every four weeks. Chemotherapy, in general, works by interrupting cell growth and division. Different agents interact with the cell and its DNA in different ways. While the particular form of chemotherapy that is administered is selected for its activity against a specific cancer, most forms of chemotherapy also interrupt **normal** cell growth and division. In a patient, these injuries show up as "side effects." Most are temporary, or *are relieved by medications* that can be administered along with the chemotherapy. Some side effects may be permanent, but these are generally less common.

Side Effects

The discussion of side effects that follows is arranged from "head to toe" according to the body system affected. Each category includes helpful hints to assist in managing that particular side effect. Remember, not all patients experience every side effect, and side effects depend on the type and dose of chemotherapy along with other patient and disease factors.

Hair Loss

Hair loss (**alopecia**) can be a devastating side effect of chemotherapy treatment. This side effect raises many anxieties for both men and women. Frequent questions regarding hair loss include: "Will it happen?", "When will it happen?", and "How long will it last?" The answers are not always straightforward.

Not all *chemotherapeutic agents* cause hair loss. Certain chemotherapies have a greater tendency *to destroy hair follicle cells*, causing loss of hair. The loss may involve areas of the head, chest, arms, legs and pubic region.
The duration of hair loss may vary from a few days to a few weeks. Often, it begins suddenly and some claim it happens overnight. For others, there is a gradual loss of hair as noticed in the bathtub or on a pillowcase. Then, the loss may increase in amount.
Hair loss is usually temporary. When healthy follicle cells have regrown, the hair also regrows. Do not be alarmed if there are some changes in the new hair. The texture, color, and style may be different. This is a common occurrence to which most people adjust without difficulty.
While hair loss cannot yet be prevented (clinical trials investigating ways to prevent hair loss are ongoing), there are ways to cope with this situation.
During the loss, many find comfort in wearing a cloth cap, bandana, wig or hairpiece. Some patients purchase their wig or hairpiece before hair loss begins. In that way, the color and texture can be more closely matched to the original hair.
Use a mild shampoo and conditioner to maintain skin and hair moisture. Try to avoid excessive shampooing since overdrying can occur. You may want to limit washings to two or three times a week.
Limit the use of hairdryers, curling irons, and chemicals such as dyes, perms and highlights to help decrease damage to existing hair follicles. During sleeping hours, a silk pillowcase will help eliminate tangling.

Mouth and Throat

The gastrointestinal system begins with the mouth. Because this is an area of rapidly dividing cells, when these cells are injured by chemotherapy, side effects may develop. Chemotherapy can cause irritation which can eventually lead to inflammation of the mouth, a condition known as **stomatitis**. A stinging sensation in the throat may develop and lead to **dysphagia** (difficulty in swallowing).
With oral hygiene and early identification of the following signs and symptoms, these conditions can be made much more comfortable. Prevention begins with good oral hygiene. Daily inspection of the mouth is the first step. Begin each day by carefully inspecting the mouth for any changes. Be sure to remove *dentures*, since hidden mouth sores can fester in this area.
Brush your teeth with a soft bristle toothbrush and use a non-alcoholic mouthwash after meals and at bedtime. Be sure your dentures are properly fitted, since a too tight or too loose fit can increase the risk of problems. Remove dentures when cleaning the mouth and do not wear them if irritation is present.
There are many common-sense interventions for uncomfortable mouth sores, ranging from good oral hygiene to proper diet. Following are some suggestions to assist in managing uncomfortable side effects:
To lessen the discomfort and irritation of a dry mouth, keep the *mucous membranes* of the mouth moist. Many patients suck hard candies or ice chips to obtain relief.
Avoid high-acid foods and drinks, such as orange and grapefruit juices. Instead, try apple juice and nectars. Carbonated beverages may irritate the gums and should also be avoided.
Avoid spicy foods: some pasta sauces, and chili. Soft, bland dishes may be more tolerable.
Keep food at room temperature or slightly cool. Very hot or cold foods can increase discomfort. Soups, mashed potatoes, noodles and jelly, served at room temperature, are just a few good examples of food to try.
If the mouth and throat appear red, be sure to alert your doctor or nurse. If white patches are noticed, notify your physician so the appropriate medication can be ordered. If there is pain, your doctor also can provide medication *to ease the pain* while the lining of the mouth and throat heal.
Maintaining good nutrition is important to the healing process. Try to keep proteins and calories at an optimal level in your daily diet.
The best treatment plan begins with daily inspection of the mouth and early detection of problems by the patient.

Nausea and Vomiting

Many people connect nausea and vomiting with chemotherapy treatment. Most people are not aware that there are many chemotherapy drugs which do not always cause these disturbing side effects.

If nausea and vomiting do occur, doctors and nurses are prepared to handle such discomforts through the use of medications. Whether you have nausea and vomiting will depend on the chemotherapy you are receiving, and vary from patient to patient. If you know someone who has received chemotherapy and had much discomfort, do not automatically think this will happen to another patient. Some people feel nauseated more readily than others. It also takes time for some people to get used to their medication.

A change in appetite may occur during and after chemotherapy treatment. What was once a favorite food may suddenly seem distasteful. Such changes are known as "*food aversions*" and are very common to chemotherapy patients. If you find that a certain meal is more appealing, make it the main meal of the day. Smaller portions of food can be eaten more often or at different intervals to maintain calorie intake.

To combat nausea and vomiting, many chemotherapy patients benefit from maintaining a clear liquid diet one to twelve hours before a scheduled treatment. These liquids can include apple juice, tea, jelly and chicken broth. Some other helpful hints during and after treatment include:

Eat bland food, such as crackers or dry toast.

Avoid overfilling your stomach by eating smaller, more frequent meals.

Take foods which are at room temperature or slightly cooler.

Keep the room or house full of fresh air and free of offensive odors. (Cooking odors are a problem for many patients.) Try to get fresh air until an offensive odor subsides.

Practice relaxation and distraction techniques. Read a book or watch a favorite program on television. Pursue activities which provide a relaxing atmosphere. Listen to a favorite album or CD.

Constipation

Constipation can be another side effect from chemotherapy. If constipation is a problem to begin with, some chemotherapy drugs may intensify it. Older people and those on low-fiber diets are also at greater risk.

Like other side effects, some patients experience constipation with chemotherapy while others do not. The following hints may help to reduce the risk of constipation.

Drink more fluids. Water intake should be at least eight glasses a day (discuss this with your physician). This helps your body maintain soft stools.

Eat a low-fat, high-fiber diet. Eat less fatty cuts of beef, cookies, sweets, and cottage cheese, and more lean beef products, poultry, fish, whole grain cereals, wheat breads, and vegetables.

Daily exercise such as walking can help ease the risk of constipation. If medication seems necessary, ask the doctor to recommend a daily stool softener or *laxative*.

Try to avoid straining so *hemorrhoids* will not develop.

Diarrhea

Diarrhea can also be a side effect of chemotherapy. Caused by the destruction of normal, dividing cells of the gastrointestinal (GI) tract, diarrhea varies from patient to patient. It is better managed if treated early. Notify your doctor or nurse if cramping, gas, or loose stools begin.

Try to drink 8-12 glasses of water a day to make up for the loss of water in the stool. Rapid and excessive fluid loss or dehydration can be a serious condition resulting from diarrhea, so drink plenty of fluids and monitor habits daily.

The best liquids to drink are those which are clear in color. They eliminate overwork by the bowels and guard against its irritation. Apple juice, ginger ale, tea, and broth are examples.

You may want to eliminate milk products and foods which are difficult to digest, such as cabbage, broccoli, cauliflower, corn, and spicy foods, in order to give the bowels a rest.

Eat bananas, potatoes, and meats to maintain a normal potassium level. Potassium is needed for muscles to function properly. If you do experience symptoms of low potassium intake such as irregular heart beats and leg cramps, be sure to call your doctor.
Keep the area around the rectum clean and moist to prevent skin irritation. Your doctor can prescribe a medicated cream, if necessary.
Keep track of the number of stools per day. If any are bloody, or there are more than three bowel movements a day, inform your doctor.

Skin Reactions

Skin reactions can range from dry skin and skin redness to acne. Some reactions can occur during and after treatment. Not all chemotherapy agents cause skin reactions, but if you should notice any changes, alert your doctor. Most people notice a greater risk of sunburn -- even in cloudy weather. It is important to wear sunscreen on exposed areas when outdoors. Keeping skin moist through the use of moisturizing creams can be helpful. If you are also receiving radiation treatments, this should be discussed with your radiation oncologist.

Effects of Chemotherapy on Bone Marrow

Bone marrow is found in the center of bones, especially the *skull, sternum, ribs, backbone* and *pelvis*. This is one of the sites in the body with rapidly growing cells. Red and white blood cells and platelets are produced here. They are held there until they mature and are ready to perform their vital functions in the blood stream.
Chemotherapy acts on the rapidly dividing cells in the bone marrow. Red cell, white cell, and platelet production may be interrupted when chemotherapy is given. As a consequence, the number of circulating cells in the bloodstream can become reduced over time, resulting in **anemia** (decreased red blood cell count), **neutropenia** (decreased white blood cell count), and **thrombocytpenia** (low platelet count).
During the course of treatment, the term **nadir** may be used. This refers to the point when the cells in the body are at their lowest number. This is a predictable time, depending on the chemotherapy agent used. One drug may have a nadir of 7-14 days. This means that 7-14 days after beginning chemotherapy, the red cells, white cells, and platelets will be at their lowest number in the bloodstream. After a period of time, the blood counts will begin to rise back to normal.

Infection

The white blood cells (WBC's) help the body to fight infections. When chemotherapy is introduced into the body, it destroys both the cancer-producing cells and the healthy, infection-fighting cells, decreasing the body's ability *to fight off infection*.
Your physician may have frequent complete blood counts (CBC) done to closely monitor your white blood cells. When the white blood cell count begins to drop below normal, this is called **neutropenia**. This is the time when chances for infection are the highest. The following hints will help prevent and detect an infection:
Good handwashing is one of the first steps for prevention of infection. This begins with soap and warm water.
Try to keep the skin intact, since small cuts and bruises during the period of low white blood cells can harbor germs and be a good place for infection to start. If cuts and abrasions occur, clean the area well with soap and water. If the cuts are not very deep, clean them with hydrogen peroxide and cover with a sterile bandage. Call the doctor's office for further directions.
Early signs of infection include:
Fever above 100.4F (37.8C)
Chills
New cough or production of *sputum*
Sore throat
More than three loose stools in a day
Pain or burning upon urination.

Be alert to these signs and notify the doctor if they occur. If a patient with a low white cell count does develop an infection, it is usually treated in the hospital with antibiotics and possibly with medication to stimulate white cell production.

Other Blood Cells Affected by Chemotherapy

Red blood cells serve a vital function in the body by carrying oxygen. Chemotherapy destroys red blood cells, causing **anemia** (low red blood cell count). Symptoms of anemia include:

Fatigue, dizziness, lightheadedness

Shortness of breath

Difficulty staying warm

Chest pains

Your complete blood count (CBC) will show a drop in the *hemoglobin* and *hematocrit*. The anemia usually resolves after *blood transfusions are given* or when the blood count begins to rise again on its own.

If any of the symptoms occur, call the doctor or visit the emergency room. You may require a blood transfusion. This can sometimes be done *on an outpatient basis*. Today, many patients are asking about the direct donation of blood products from family members. If they are interested in this, they should speak with the doctor well ahead of time of a possible transfusion.

When the red blood counts are low, try to get more rest. Pace your activities, limiting the amount of work done in a day.

Red blood cell **stimulating factors** are also available which may help to prevent anemia. These are medications given to enhance red cell production in the bone marrow. Your physician may recommend these to reduce the risk of anemia.

Platelets are the blood cells which *facilitate the clotting of blood* to stop bleeding from an injury. These clotting cells are also destroyed by chemotherapy.

Some of the first signs of a low platelet count (**thrombocytopenia**) are constant bleeding from a cut and easy bruisability. Some people notice bleeding from the gums after eating a meal or brushing their teeth. A very common sign is the observance of small, pinpoint hemorrhages, known as **petechiae**, inside the mouth or elsewhere on the body, such as the arms and legs.

If nose bleeds occur, apply pressure to the nostrils while remaining in an upright position. Apply ice to the nose, if necessary. If bleeding continues, contact your physician immediately. Bleeding can also occur from the bladder or rectum and show up as blood in the urine or stool. If this happens, contact your physician at once. In addition:

Avoid injury to the skin during a period when platelets are low. This means avoiding use of a razor or nail clippers. If injury does occur, apply pressure to any spots which are bleeding for at least 10 minutes. Call your physician immediately if the bleeding does not stop.

To prevent bleeding from the mouth, use a soft bristle toothbrush. Avoid the use of dental floss until blood counts are within the normal range.

Be sure dentures fit properly to cut down on irritation to the gums. When dentures are removed, rinse with a mouthwash low in alcohol to prevent drying out the insides of the mouth and increasing the risk of bleeding.

Bleeding can also be found in the stool when platelets are low. It is important to keep the stool soft and to refrain from straining. Straining can rupture tiny blood vessels in the rectal area and cause hemorrhoids. Straining also increases the pressure around the brain, increasing the risk of another hemorrhage. You may take a laxative to keep your bowels soft and regular.

Sexuality

Physical changes affecting sexuality, sexual relations and reproduction may occur as a result of chemotherapy. Women may notice a change in their menstrual cycle, including the absence of menstrual periods. Decreased vaginal lubrication may cause discomfort during intercourse, but may be prevented by using a water soluble lubricant. Sperm counts in men may be decreased due to treatment. These and other side effects vary with different chemotherapy drugs. Therefore, it is important to discuss this with your doctor or nurse. A few questions to ask may be:

What physical changes will I experience from the chemotherapy that may affect my sexuality?

Are there any restrictions on sexual activity during or after treatment?
Can this treatment cause *infertility*?
Do you have any suggestions that enhance comfort during intercourse?
It may be difficult at first to discuss this intimate topic with strangers, but sharing your questions and feelings with a health care professional may be beneficial in maintaining a positive attitude toward sexuality and sexual relations during and after cancer treatment.
Comprehension check:

1. Explain the meaning of the words given below:

dentures alopecia dysphagia stomatitis food aversions laxative anemia thrombocytpenia neutropenia nadir CBC petechiae

2. Looking into your notes make a summary of the text speaking about this way of cancer treatment.

Text 4.Additional reading. Radiation

Task: read the text and the definitions of the terms related to this type of treatment. Then make a summary about this way of cancer treatment.

The goal of radiation therapy is to deliver a maximal dose of ionizing radiation (irradiation) to the tumor tissue and a minimal dose to the surrounding normal tissue. In reality, this goal is difficult to achieve, and usually one accepts a degree of residual normal cell damage (morbidity) as a side effect of the destruction of the tumor. High-dose radiation produces damage to DNA. Newer techniques of radiation utilize high-energy beams of protons (atomic particles) to improve the focus of the beam and limit damage to normal tissues. Radiation damage to normal tissue leads to fibrosis (an increase in connective tissue), loss of epithelial (surface lining) cells, and damage to blood vessels.
Terms used in the field of radiation therapy for cancer are as follows:

brachytherapy	Implantation of seeds of radioactive material directly into the tumor; used in prostatic cancer and brain tumors.
electron beams	Low-energy beams for treatment of skin or surface tumors.
fields	Defined areas that will be bombarded by radiation.
fractionation	A method of dividing radiation into small, repeated doses rather than providing fewer large doses. Fractionation allows larger total doses to be given while causing less damage to normal tissue.
linear accelerator	A large electronic device that produces high-energy x-ray beams for the treatment of deep-seated tumors.
proton therapy	Highly focused, high-energy irradiation. This treatment requires large machinery such as a cyclotron to generate particles.
radiocurable tumor	Tumor that can be completely eradicated by radiation therapy. Usually, this is a localized tumor with no evidence of metastasis. Lymphomas and Hodgkin disease are examples.
radioresistant tumor	Tumor that requires large doses of radiation to produce death of the cells. Connective tissue tumors are the most radioresistant.
radiosensitive tumor	Tumor in which irradiation can cause the death of cells without serious damage to surrounding tissue. Tumors of hematopoietic (blood-forming)

	and lymphatic origins are radiosensitive.
radiosensitizers	Drugs that increase the sensitivity of tumors to X-rays. Many cancer chemotherapy drugs, especially 5-fluorouracil and cisplatin, sensitize tumors and normal tissue to radiation and improve the outcome of the treatment.

Speech exercises.

1. Read the dialogues. Pay attention to the words in italics. Consult the dictionary if necessary. Act the dialogues out with your partner.

I. Abdominal Pain of Unknown Origin.

- 24 hours before admission the patient, a 25-year-old woman, developed *a low abdominal pain*. It gradually *became generalized* over the entire abdomen.
- What kind of pain was it?
- It was *diffused* and severe pain.
- What else was she complaining of?
- Of a *mild aching* across the shoulders, *radiating into* the lower back.
- What was disclosed on physical examination?
- It was noted that the abdomen was *diffusely tender*, but *without localized findings*.
- Anything else to make her state worse?
- Well, she had *icterus (jaundice*) and *pallor* of the *mucous membranes*. The blood pressure was120 / 80 mm Hg; pulse rate 98 beats per minute; temperature 101.6 F (=38.2 C).
- Were *routine laboratory studies* of value?
- Laboratory tests suggested *anemia*.
- What therapy did you administer?
- During the first hospital day she was given 2 units of *whole blood* and the treatment continued for some days.
- What was the reaction?
- There was *no immediate effect.* And because of *continued abdominal pain*, in spite of different *therapeutic efforts*, she required *large doses of narcotics*.

WORDS: *a low abdominal pain – боль в нижней части живота;* became generalized – распространилась; *without localized findings* – без локальных точек; *icterus, jaundice* - желтуха; *pallor* – бледность; *anemia*; *whole blood* - цельная кровь (в отличие от сыворотки).

II. Brain Lesion

- This 47-year-old woman was first admitted to the National Cancer Institute, in 1995 with a suggested diagnosis of *Hodgkin's disease*.
- *Was the diagnosis confirmed* there?
- Yes. A *biopsy* of the left lung mass revealed Hodgkin's disease and she received 3.000 *rads* to the local area. She had been well until 1998 when she *developed uremia secondary to bilateral ureteral obstruction due to enlarged retroperitoneal lymph nodes*, and she was transferred to our department.
- What was your impression from physical examination?
- Well, I was under the impression that the patient was *reduced to insensibility*. She could be made answer only simple questions.
- Did a neurologist see her?
- Yes, he said that there were no *neurological signs*, and he performed a *four-view brain scan examination.*
- Well, what did it reveal?

- The scan revealed two *well-defined frontal lobes* with larger lesion on the right side. At this time *electroencephalogram* was not quite normal.
- What medical management did she undergo?
- She was *submitted to the conservative therapy* with excellent results. Within 4 days the patient became more oriented, within 2 weeks was eating by herself, talking to her family and walking a little. *Repeated brain scan revealed complete resolution of the lesion*. The patient did well and was *discharged*.

WORDS: *Hodgkin's disease* - лимфогранулематоз; *uremia secondary to bilateral ureteral obstruction* –уремия как следствие двусторонней закупорки мочеточников; *to enlarged retroperitoneal lymph nodes* –забрюшные (ретроперитонеальные) лимфоузлы; *reduced to insensibility* – была в полусознательном состоянии; *four-view brain scan examination* – сканирование мозга в четырех проекциях; *well-defined frontal lobe* – отчетливые фронтальные доли; *repeated brain scan revealed complete resolution of the lesion* –повторное сканирование показало полное рассасывание очага.

III. Anuria due to Malignant Hypertension.

- You have admitted a new patient with *hypertension* and *anuria*, haven't you?
- Yes, it's a 23-year-old woman.
- What is her past history?
- She was first admitted to another hospital in 1995 because of *hematuria* and a bad headache.
- Was her anuria in *advanced stage* then?
- You know, *the urine output was scanty*, but it was not measured though.
- Did she undergo a *cystoscopy*?
- Yes, there is information about it. During cystoscopy, *bloody urine* was coming from both *ureteral orificies*.
- Was the *pyelography* performed?
- Yes, it demonstrated *normalized kidneys* and no *obstruction*.
- What was her blood pressure?
- It was very high at that time: 150/90 to 240/ 100 mm Hg. It was *malignant hypertension*, which persisted despite the therapy.
- Couldn't you suggest that anuria was the result of this *morbid condition*?
- We could suppose as well that anuria was *secondary* to the pyelography performed before her present admission.
- Well, you have insufficient data to make a correct diagnosis. More clinical and laboratory study will certainly be helpful to get a real picture of this *morbid condition*.
- Yes, only then we shall *decide upon the appropriate type of therapy or surgery*.
- You are absolutely correct. Clinical and laboratory data are quite necessary to the *diagnostic evaluation of the disease*.

WORDS: *anuria* - анурия; *malignant hypertension* – злокачественная гипертония; *hematuria* –гематурия (кровь в моче); *urine output* – мочеиспускание; *scanty* - скудный; *cystoscopy* - цистоскпия; *pyelography (roentgenography of the kidney and ureter)* - пиелография; *ureteral orificies obstruction* - непроходимость, обструкция; *morbid condition* – патологическое состояние; *advanced stage* - поздняя, продвинутая стадия.

Task: Using vocabulary of these dialogues write a presentation of the case of a patient with some type of cancer admitted to the hospital describing complaints, past history, tests performed and possible treatment administered.

AIDS and HIV.

Task 1. Study the following words and expressions which can be used in speaking about AIDS and HIV. Consult the dictionary if necessary. Then read the texts giving some data about the

situation with AIDS and HIV in the world. Pick out the most important figures and information, make notes.

Active Vocabulary. Useful words and expressions.

Characteristic of the disease:
long-term / terminal condition
to fight certain infections
immune system is weakened
to destroy the immune system
to mutate
to produce different strains resistant to drugs

Ways of getting it:
to be infected with … through
to acquire / get / contract HIV
to pass on the virus to others
to be passed on by …
to be transmitted through…
the risk of getting HIV (in sharing needles and syringes)

Reducing the risk of transmission:
to take precautions
to reduce the risk of transmission
to check blood and blood products for HIV
to use routine precautions when dealing with patients
to follow standard hygiene and safety precautions
to carry out (anonymous) testing and screening for different infections
to be routinely tested for HIV at ante-natal clinics
to have access to good services and treatment
STD (Sexually Transmitted Diseases)
to be strictly confidential

Drugs:
to target HIV at different points in its life
to inhibit the action of
to receive anti-viral drugs
to be able to control the condition
to stay / be off drugs
to put back on drugs (to be put back on drugs)
to be taken off drugs
anti-HIV drug cocktail – highly active antiretroviral therapy (HAART)
to slow the progress of HIV infection and the onset of AIDS
effectiveness can wear off
protective vaccine
to develop tolerance to
to be resistant to

Measures to prevent the spread of infection:
to be sure to avoid the risk activities
to be aware of the potential impact of HIV
to prevent the spread of HIV
to work on prevention and education
more radical measures

to keep HIV under control

Text 1. Russia's Aids catastrophe growing

UNAIDS figures for 2000
5.3 million people newly infected with HIV
34.7 million adults living with HIV/AIDS
1.4 million children living with HIV/AIDS
3 million deaths from AIDS
2.4 million deaths from AIDS in sub-Saharan Africa
21.8 million deaths from AIDS so far
47% of HIV adults are women

Infection rates rocket among East European drug users

The spiralling rate of HIV infection in Russia and Eastern Europe has been revealed by shocking new figures.

The annual "Aids Epidemic Update" from the United Nations and World Health Organisation estimates that more than 36mln people around the world are now living with HIV or AIDS.

Although sub-Saharan Africa is still the main focus of the HIV epidemic worldwide, new infections there have fallen slightly.

This, say scientists, may be because, in some countries and age groups, the infected outnumber the uninfected.

But one of the new regions of greatest concern is Eastern Europe, and Russia in particular, where experts predict more than a million people will be infected by HIV within two years.

In fact more new HIV infections have been registered in Russia during 2000 than all previous years put together.

The UNAIDS report confirms that "HIV shows no sign of curbing its exponential growth in the Russian Federation".

There are now almost 70,000 cases of full blown AIDS registered with the National AIDS Centre in Russia - compared to just over 5,500 last year.

The majority of those with HIV in Eastern Europe are injecting drug users, although there has also been an increasing spread among sex workers.

There are an estimated three to four million drug users in Russia, and pessimists believe as many as two million drug users could be infected by 2002.

In Western Europe and the United States the UNAIDS report describes efforts to slow the spread of HIV as having "stalled".

Estimates suggest that the number of people newly infected during 2000 has not fallen from the previous year, when 30,000 acquired HIV in Western Europe and 45,000 in North America.

It says: "In this era in which few young gay men have seen friends die of AIDS, and some mistakenly view anti-retrovirals as a cure, there is growing complacency about the HIV risk..."

It is injecting drug users, however, who are believed to form the bulk of those newly infected in most higher income countries.

Africa bears the brunt

The latest figures show, say researchers, that AIDS has "brought a global epidemic far more extensive than predicted a decade ago".

It is the countries of sub-Saharan Africa that once again bear the brunt of the HIV burden.

Here, around 3.8 million people were newly infected with the virus during the past year.

But, this is slightly down on the four million new infections for the region during 1999.

Nevertheless, in eight African countries where HIV infection is most prevalent the report says "conservative analyses show that AIDS will claim the lives of around a third of today's 15-year-olds".

In such countries it warns that HIV "threatens to devastate whole communities, rolling back decades of progress towards a healthier and more prosperous future".
The report illustrates how HIV is affecting these communities in lost productivity and the increasing costs of medical care.
And, while it is the better educated who take steps to prevent the spread of HIV, education is suffering in countries such as Zambia and Swaziland, because of the number of teachers dying of AIDS.
Gavin Hart, spokesman for the National AIDS Trust, said the figures were "horrific". He said: "Developed nations have to redouble their efforts to assist the developing countries to fight HIV."
He added countries hit by the epidemic, such as those in Eastern Europe, needed to work on prevention and education, and to look at more radical measures like setting up needle exchanges.
Other parts of the globe are also beginning to feel the impact of HIV.
Although data is more limited from North Africa and the Middle East, indications are that the number of new infections is increasing.
Algerian reports show that 1% of women attending antenatal clinics are infected with the virus.
In south and Southeast Asia, around 700,000 adults were newly infected with HIV this year, some through IV drug use, some through sex with prostitutes and some through homosexual sex.
And there are warnings that other parts of Asia, particularly those with a high profile sex industry, could still see a surge in HIV infections.
World AIDS Day on 1 December focuses this year on the role of men in preventing the spread of the disease.
The theme of "Men Make a Difference" is aimed at encouraging both men and women to talk about HIV and AIDS and to overcome the taboos that stop people taking steps to protect themselves from infection.

Text 2. AIDS drugs factfile

There are several drugs which specifically target HIV at different points in its life cycle. Using them in combination has proved much more effective than prescribing them one at a time. In Europe and the US, combination therapy has resulted in a huge drop in AIDS deaths and in some people the drugs have reduced the virus to undetectable levels. However, the drugs do have side effects, they do not work for all people and the effectiveness of individual drugs can wear off. And they are very expensive.
What were the first anti-HIV drugs?
The first drugs to be developed to combat HIV were AZT (also called zidovudine or Retrovir), DDI (didanosine or Videx) and DDC (zalcitabine or Hivid). These all belong to a group of drugs called nucleoside analogues or reverse *transcriptase inhibitors*.
They *inhibit* the action of an enzyme called reverse transcriptase which enables HIV to spread, leading to a breakdown of the patient's immune system.
AZT taken alone has been shown to reduce HIV transmission from woman to baby.
Women who avoid breastfeeding and take AZT are about 66% less likely to pass on the virus to their child.
Using combinations of drugs
Scientists noticed that people using more than one of the drugs were less likely to develop AIDS, the syndrome of diseases caused when HIV has destroyed the immune system. They were therefore more likely to live longer.
In the UK, five nucleoside analogues have been licensed. In addition to AZT, DDI and DDC, doctors can also prescribe 3TC (lamivudine or Epivir) and d4T (stavudine or Zerit).
Some patients are also taking part in trials for another nuceloside analogue drug called abacavir.
Another group of drugs which stops the reverse transcriptase enzyme from working is non-nucleoside reverse transcriptase inhibitors or NNRTIs for short.

One, nevirapine, has been licensed in the US and is available in the UK. Two others are being tested.
The drugs are particularly effective for people who have not had any other anti-HIV drugs before, but they have to be taken with at least two nucleoside analogues.

Other anti-HIV drugs

There are three licensed drugs in Europe which target another enzyme which helps HIV to spread.
They are usually used in combination with nucleoside analogues. They are: indinavir (sold as Crixivan), ritonavir (trade name Norvir) and saquinavir (sold as Invirase).
Using a protease inhibitor in combination with other anti-HIV drugs can reduce the progress of HIV and the risk of death by 50% in people whose immune systems have been severely compromised. The benefits for those whose immune systems have been so severely attacked by HIV are not as noticeable.
However, combinations that contain indinavir or ritonavir can reduce the virus to almost undetectable levels in many people with HIV.
Scientists are creating more protease inhibitors.

Resistance

When HIV reproduces, it can produce different strains which may be resistant to some drugs.
In some cases, the new strains can be resistant not just to one drug, but to other related drugs.
The mutation of HIV is one of the main reasons that a particular combination of drugs can lose effectiveness over time.
People are advised to change their combination of drugs if it becomes less successful at fighting HIV.
Drug-resistant HIV can be transmitted from person to person through body fluids - the same way as ordinary HIV.

Taking combination therapy

Taking the wrong dose of anti-HIV drugs or the wrong combination can be more dangerous in the long run that not taking the drugs at all.
This is because wrongly treated HIV can reproduce at very high rates and produce resistant strains very quickly.
Taking combination therapy can be very disruptive to daily life.
The drugs have to be taken at the right time in the right doses. Some have *to be taken on an empty stomach* and others *on a full stomach*.
It is vital that patients do not forget to take their pills as, if the level of drugs in the bloodstream drops too low, HIV may develop resistance to them.
The side effects associated with the different anti-HIV drugs vary according to the drug and the individual taking them. They can include anaemia.
Because of the difficulties surrounding combination therapy, some HIV organisations have developed services for helping people take their medicine and for giving them more information about the different drugs.

Expense

The drugs are very expensive, which means it is difficult for governments in developing countries to pay for them.
Combination therapy is estimated to cost around $950 per month.
At the end of last year, some firms involved in manufacturing drugs used in combination therapy reduced their prices for developing countries.
For example, in Uganda, the cost of combination therapy was reduced to around $500 per month. However, this is still well out of the reach of most Ugandans. Even middle income Ugandans are only estimated to earn around $400 a month

Task 2. Write a summary about the situation with HIV and AIDS in the world nowadays covering the following aspects: characteristic of the disease, statistics, ways of transmission, risk groups, prevention, and drugs to control the disease.

ADDICTIONS. DRUG AND ALCOHOL ABUSE

Pre-reading task.

1. Discuss the following questions in groups: How can you define alcoholism? What are the typical symptoms of the disease? Can it be treated or prevented?
2. While reading the text find some information and fill in the table:

Causes	Symptoms	Prevention	Treatment

Text 1. Alcoholism

Overview | Treatment

Definition

A chronic illness marked by uncontrolled consumption of alcoholic beverages that interferes with physical or mental health, and social, family, or occupational responsibilities.

Alternative names: alcohol dependence; habitual alcohol use

Causes, incidence, and risk factors

Alcoholism is a type of drug dependence. There is both physical and psychological dependence with this addiction. Physical dependence reveals itself in withdrawal symptoms when alcohol intake is interrupted, tolerance to the effects of alcohol, and evidence of alcohol-associated illnesses. Alcohol affects the central nervous system as a depressant resulting in a decrease of activity, anxiety, tension, and inhibitions. Even a low level of alcohol within the body slows reactions. Concentration and judgment become impaired. In excessive amounts, intoxication, or poisoning results.

Alcohol also affects other body systems. Irritation of the gastrointestinal tract can occur with erosion of the lining of the stomach causing nausea and vomiting. Vitamins are not absorbed properly, which can lead to nutritional deficiencies with the long-term use of alcohol. Liver disease, called hepatic cirrhosis, may also develop. The cardiovascular system may be affected by cardiomyopathy. Sexual dysfunction can also occur, causing erectile dysfunction in men and cessation of menses in women. Alcohol consumption during pregnancy can cause problems in the developing fetus known as fetal alcohol syndrome.

The development of dependence upon alcohol may occur over 5 to 25 years, following a relatively consistent pattern of progression. At first, a tolerance of alcohol develops. This results in a person being able to consume a greater quantity of alcohol before its adverse effects are noticed. Memory lapses relating to drinking episodes may follow tolerance. Then a lack of control over drinking occurs, and the affected person can no longer discontinue drinking whenever desired. The most severe drinking behavior includes prolonged binges of drinking with associated mental or physical complications. Some people are able to gain control over their dependence in earlier phases before a total lack of control occurs.

There is no definite cause of alcoholism; however, several factors may play a role in its development. In families with an alcoholic parent, an offspring is more likely to become an alcoholic than a person without an alcoholic parent. The reason for this occurrence is not known, but genetic or biochemical abnormalities may be present. Psychological factors may include a need for relief of anxiety, unresolved conflict within relationships, or low self-esteem. Social factors include availability of alcohol, social acceptance of the use of alcohol, peer pressure, and

stressful lifestyles. Incidence of alcohol dependence is increasing. Statistics vary, but approximately 7% of adults in the U.S. are affected.

Prevention

Until the primary causes of alcoholism are understood, the disease cannot be prevented. However, educational programs about alcohol directed at children, teenagers, and their parents, as well as appropriate attitudes towards alcohol use within the home, may help to prevent its abuse.

Symptoms

tolerance to the effects of alcohol need for daily or frequent use of alcohol for adequate function lack of control over drinking, with inability to discontinue or reduce alcohol intake solitary drinking making excuses to drink episodes of memory loss associated with drinking (black outs) episodes of violence associated with drinking interference with social and family relationships or occupational responsibilities behavioral problems such as missing work	unexplained mood swings secretive behavior to hide alcohol related behavior hostility when confronted about drinking neglect of food intake neglect of physical appearance nausea vomiting shaking in the morning abdominal pain cramps numbness and tingling redness and enlarged capillaries in the face (especially the nose) confusion

Note: Symptoms may vary.

Alcohol withdrawal symptoms may vary from mild to severe:

tremors to uncontrollable body shaking
restlessness to agitation
insomnia to total wakefulness
loss of appetite to rejection of all food
nausea
vomiting
confusion
hallucinations
rapid heart rate
sweating
convulsions
delirium tremens

Additional symptoms that may be associated with this disease: tongue problems, eyelid drooping, dizziness

Signs and tests

There is a history of chronic and excessive alcohol use. A history may be obtained from family if the affected person is unwilling or unable to answer questions. A physical examination is performed to identify physical problems related to alcohol use.

A toxicology screen or blood alcohol level confirms recent alcohol ingestion (which does not necessarily confirm alcoholism). Chem 20 may show abnormalities. Liver function tests including ALP may be abnormal.

This disease may also alter the results of the following tests:

uric acid, urine, uric acid, osmolality, serum magnesium – test, ketones – urine, eosinophil count – absolute, ALP (alkaline phosphatase) isoenzyme

EXERCISES.

Vocabulary exercises.

1. Practise pronunciation of the following words:
alcoholic beverage; depressant; anxiety; inhibition; erosion; hepatic cirrhosis; cessation; fetus (foetus)-fetal; adverse; secretive; numbness; insomnia; tremor; hallucination; delirium tremens

2. Find Russian equivalents to the following words and word combinations. Make sentences of your own with them:
interfere with physical or mental health; to affect the central nervous system; impaired concentration and judgment; intoxication; irritation of gastrointestinal tract; memory lapses; unresolved conflict; to gain control over the dependence; to develop tolerance; solitary drinking.

3. Form the new words with the help of the following prefixes:
dis-: function; continue; associate
un-: resolved; conscious; controlled
ab- : normal; use
in-: ability; formal; essential; effective; adequate, sufficient

4. Find the matches.

tolerance	цирроз печени
depressant	головокружение
insomnia	галлюцинация
impaired	плод
foetus	прекращение
hallucination	тошнота
inhibition	эрозия
nausea	подавление
cirrhosis	толерантность
dizziness	ухудшенный
erosion	бессонница
cessation	депрессант

Speech exercises.

5. Answer the questions to the text.
1. What can be called alcoholism?
2. What alternative names do you know?
3. What kind of addiction is it – physical or psychological?
4. When does physical addiction reveal itself?
5. How does alcohol affect the central nervous system (CNS)?
6. How does it affect gastrointestinal tract? Liver?
7. What other body systems and functions can suffer?
8. How does the dependence develop?
9. Can people gain control over their dependence?
10. Can you name causes and risk factors?
11. What do you know about the incidence of alcohol dependence (in USA or in Russia)?
12. Can it be prevented? What can help to prevent it?
13. Name some symptoms. Which do you think are the most obvious? Which appear first?
14. What are alcohol withdrawal symptoms?
15. Do you know any tests that can show the signs of this disease?

16. How can alcohol abuse interfere with social and family relationships or with other activities?
17. What is binge drinking?
18. Does alcohol have any positive effects? Can it reduce the risk of certain diseases you're your point of view? (After reading additional texts you will be able to compare your answers with some statistics?)

6. Make dialogues:
- between the doctor and the patient with alcohol dependence;
- between a doctor and the relative of an alcoholic who doesn't want to undergo a treatment;
- between an alcoholic husband and his wife who wants him to go to the doctor;
- between a teenager and a parent who suspects the child of heavy drinking.

7. Read the text and render it in English.

Лечение алкоголизма методом ТЭС.

Лечение алкоголизма – одна из важнейших, но далеко не решенных медико-социальных проблем. Для терапии этого недуга испытано огромное количество медикаментозных и немедикаментозных средств. Но применение большинства лекарств сопровождается проявлением нежелательных побочных эффектов, особенно на фоне характерных для такого состояния повреждений печени, сердечно-сосудистой системы. Поэтому в последнее время все большее внимание уделяют немедикаментозным неинвазивным методам лечения, которые практически не имеют побочных эффектов.

Additional reading. Texts for reading, discussion and translation.

Text 1. DRINKING: THE GOOD, THE BAD, THE DOWNRIGHT UGLY

A Guide to Sensible Drinking

A small amount of alcohol does you no harm and can be enjoyable. However, if it is a large amount, regularly, then maybe it's time to think a little more about it.

Drinking is best in moderation.

Alcohol — or even drinking it at the wrong time — can result in more than a *hangover*. Drinking is a major cause of accidents at home, at work, at College and on the road. Excessive drinking can seriously damage your health, your self- esteem, your studies — not to mention your pocket!

Gauging your drinking

It is important to know how much alcohol there is in your drink, and how different drinks compare. Alcohol is measured in "units".

One unit is equal to:

• Half a pint of ordinary beer or lager

• 1 single pub measure of spirits

• 1 standard glass of wine (4 fl oz)

• 1 small glass of sherry

• 1 pub measure of vermouth or aperitif

Strong lagers, beers and ciders contain almost three times as much alcohol as ordinary strength drinks.

Sensible limits

• For men — up to 21 units weekly

• For women — up to 14 units weekly

Men drinking more than 36 units per week and women drinking more than 22 units per week are likely to be causing some damage to their health.

Women are more at risk from the harmful effects of alcohol than men. As alcohol is distributed through the body fluids it is more "diluted" in men than in women.

The effects of alcohol

In your body

Most of the alcohol you drink is rapidly absorbed into the bloodstream. Nearly all the alcohol is burnt up by the liver and the rest is disposed of either in sweat or urine. The concentration of alcohol in the body depends on how much you drink, whether you have eaten, your height, weight, age and sex. If you're smaller or lighter than average, or young and not used to drinking you will be more easily affected by alcohol. It takes 1 hour for the body to get rid of the alcohol in one unit. For example, if you start at 8 pm and drink 3.5 pints of lager and 2 vodkas (9 units) there will still be alcohol in your blood stream until at least 5 am. This will be longer if you have been drinking extra strength lager or beer, have been drinking on an empty or if you are smaller than average.

Changing behaviour

Drinking can make people lively and chatty, others silent and miserable. However, it is worth remembering that alcohol is not a stimulant. It's a depressant, in that it depresses some brain functions, affecting judgment, self-control and co-ordination.

Excessive alcohol consumption can sometimes "loosen inhibitions", often causing actions completely out of character. Drinking heavily may lead to casual and unprotected sex, sexually transmitted diseases and can be a factor in rape and unplanned pregnancy.

Drinking alcohol can also cause major problems when driving. Your driving ability and judgment is impaired after only one drink. Remember, you can be prosecuted if your driving is considered by the police to have been impaired by alcohol, even if you are under the legal limit. The only way to be sure you're safe is not to drink a large amount of alcohol in the evening you may still be over the limit the next morning.

Hangovers

Hangovers are caused by drinking too much alcohol. Dehydration is the main problem. Alcohol tends to make water move out of the body cells. To avoid feeling hung over, drink plenty of water before you go to bed and more as soon as you get up.

The only real way to avoid a hangover is to be careful about how much you drink.

The good news!

• There is nothing wrong with drinking alcohol as long as it is used sensibly. Some of the following points may be useful to bear in mind when drinking:

• Try low or no alcohol drinks between, or instead of, your usual drinks

• Consider buying your own drinks and not buying in large rounds. This can help you to control what you drink and will help your pocket as well!

• Keep a record of how much you drink, what you drink, when and where over a two-week period. You may be surprised at the result.

• When drinking at home, remember our own measures are usually much larger than those in the pub. Be careful — especially when driving!

Finally, if you feel you would like to discuss your drinking habits confidentially, but don't feel ready to go to the **AA*** then pop along to the Unions' **Drugs and Alcohol Peer Support Group**. There you can either simply pick up some information on a whole lot of issues relating to both drugs and alcohol (as the name would suggest), or you can speak to one of the student volunteers.

* AA – Alcoholics Anonymous (an organisation that helps people with alcohol addicion to overcome their problem. It unites men and women who share their experience, aims and hopes with each other in order to help themselves and others to overcome alcohol dependence.)

Text 2. Alcohol Withdrawal Syndrome

What is alcohol withdrawal syndrome?

Alcohol withdrawal syndrome is a set of symptoms that people have when they suddenly stop drinking after using alcohol for a long period of time. Some people have mild shakiness and sweats. Some people *hallucinate* (hear and see things that don't exist). The worst form of withdrawal is called "DTs" (*delirium tremens*). DTs can be very serious if not treated by a doctor.

Withdrawal symptoms rarely occur in people who only drink once in a while. Symptoms usually occur in people who have been drinking heavily for weeks or months and then suddenly stop drinking. People who have gone through withdrawal before are more likely to have withdrawal symptoms each time they quit drinking.

Do people in withdrawal need to see a doctor?

Yes. Your doctor needs to know you're going through withdrawal so he or she can make sure it doesn't lead to more serious health problems. If you go through withdrawal a number of times without getting the right treatment, your symptoms may get worse each time. So even if your withdrawal symptoms don't seem that bad, it's important to see your doctor. This is especially true for people who have had a bad withdrawal before and people who have other health problems, such as infections, heart disease, lung disease or a history of seizures.

People who quit using other drugs (such as tobacco, injected drugs or cocaine) at the same time as they stop drinking alcohol might have severe withdrawal problems. They should see a doctor before they quit.

What can a doctor do to help people in withdrawal?

A doctor can keep track of withdrawal symptoms so that more serious health problems don't develop. He or she can also give emotional support.

Medicines can control the shakiness, anxiety and confusion that come with alcohol withdrawal. Only a doctor can prescribe these medicines. If you take the medicines at an early stage of the withdrawal, they may keep your symptoms from getting worse. Most people in withdrawal don't need to be hospitalized.

What can family and friends do to help people going through withdrawal?

It's important for people going through withdrawal to have a quiet, safe place to stay until the withdrawal is over. The urge to drink again during withdrawal can be very strong. Some people may put themselves into dangerous situations. After withdrawal symptoms go away, it's important for the person to join a treatment or sobriety program, such as Alcoholics Anonymous. Support from family and friends can help a person find success in one of these programs.

Text 3. Understanding Alcohol Use Disorders and Their Treatment

For many people, drinking alcohol is nothing more than a pleasant way to relax. However, people with alcohol use disorders drink to excess, endangering both themselves and others. This question-and-answer fact sheet explains alcohol problems and how psychologists can help people recover.

When does drinking become a problem?

For most adults, moderate alcohol use - no more than two drinks a day for men and one for women and older people - is relatively harmless. (A "drink" means 1.5 ounces of spirits, 5 ounces of wine, or 12 ounces of beer, all of which contain 0.5 ounces of alcohol.) Moderate use, however, lies at one end of a range that moves through alcohol abuse to alcohol dependence.

Alcohol abuse is a drinking pattern that results in significant and recurrent adverse consequences. *Alcohol abusers* may fail to fulfill major school, work or family obligations. They may have drinking-related legal problems, such as repeated arrests for driving while *intoxicated*. They may have relationship problems related to their drinking.

People with alcoholism - technically known as alcohol dependence - have lost reliable control of their alcohol use. It doesn't matter what kind of alcohol someone drinks or even how much: alcohol-dependent people are often unable to stop drinking once they start. Alcohol dependence is characterized by *tolerance* (the need to drink more to achieve the same "high") and withdrawal symptoms if drinking is suddenly stopped. Withdrawal symptoms may include nausea, sweating, restlessness, irritability, tremors, hallucinations, and convulsions.

Although severe alcohol problems get the most public attention, even mild to moderate problems cause substantial damage to individuals, their families, and the community. According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), 1 in 13 American adults is an alcohol abuser or alcoholic at any given time. A 1997 government survey revealed that drinking problems are also common among younger Americans. For example, almost 5 million youths aged 12 to 20 engage in *binge drinking*, which involves females consuming at least four drinks on a single occasion and males at least five.

What causes alcohol-related disorders?

Problem drinking has multiple causes, with genetic, physiological, psychological and social factors all playing a role. Not every individual is equally affected by each cause. For some alcohol abusers, psychological traits such as impulsiveness, low self-esteem, and a need for approval prompt inappropriate drinking. Some individuals drink to cope with or "medicate" emotional problems. Social and environmental factors such as peer pressure and the easy availability of alcohol can play key roles. Poverty and physical or sexual abuse increase the odds of developing alcohol dependence.

Genetic factors make some people especially *vulnerable to* alcohol dependence. Contrary to myth, being able to "hold your liquor" means you're probably more at risk - not less - for alcohol problems. Yet a family history of alcohol problems doesn't mean that the children of those with alcohol problems will automatically grow up to have the same problems - nor does the absence of family drinking problems necessarily protect children from developing these problems.

Once people begin drinking excessively, the problem can perpetuate itself. Heavy drinking can cause physiological changes that make more drinking the only way to avoid discomfort. Individuals with alcohol dependence may drink partly to reduce or avoid withdrawal symptoms.

How do alcohol use disorders affect people?

While some research suggests that small amounts of alcohol may have beneficial cardiovascular effects, there is widespread agreement that heavier drinking can lead to health problems. In fact, 100,000 Americans die from alcohol-related causes each year. Short-term effects include memory loss, hangovers, and blackouts. Long-term problems associated with heavy drinking include *stomach ailments*, heart problems, cancer, brain damage, serious memory loss, and liver cirrhosis. Heavy drinkers also markedly increase their chances of dying from automobile accidents, homicide, and suicide. Although men are much more likely than women to develop alcoholism, women's health suffers more, even at lower levels of consumption.

Drinking problems also have a very negative impact on mental health. Alcohol abuse and alcoholism can worsen existing conditions such as depression or induce new problems such as serious memory loss, depression, or anxiety.

Alcohol problems don't just hurt the drinker. According to NIAAA, more than half of Americans have at least one close relative with a drinking problem. Spouses and children of

heavy drinkers are more likely to face family violence; children are more likely to suffer physical and sexual abuse and neglect and to develop psychological problems. Women who drink during pregnancy run a serious risk of damaging their fetuses. Relatives and friends can be killed or injured in alcohol-related accidents and assaults.

When should someone seek help?

Individuals often hide their drinking or deny they have a problem. How can you tell if you or someone you know is in trouble? Signs of a possible problem include having friends or relatives express concern, being annoyed when people criticize your drinking, feeling guilty about your drinking and thinking that you should cut down but finding yourself unable to do so, and/or needing a morning drink to steady your nerves or relieve a hangover.

Some people with drinking problems work hard to *resolve* them, and often, with the support of family members and/or friends, these individuals are able to recover on their own. However, those with alcohol dependence usually can't stop drinking through willpower alone. Many need outside help. They may need *medically supervised detoxification* to avoid potentially life-threatening withdrawal symptoms such as seizures. Once people are stabilized, they may need help resolving psychological issues associated with problem drinking.

There are several approaches available for treating alcohol problems. No one approach is best for all individuals.

How can a psychologist help?

Psychologists who are trained and experienced in treating alcohol problems can be helpful in many ways. Before the drinker seeks assistance, a psychologist can guide the family or others in helping to increase the drinker's motivation to change.

A psychologist can begin with the drinker by assessing the types and degrees of problems the drinker has experienced. The results of the assessment can offer initial guidance to the drinker about what treatment to seek and help motivate the problem drinker to get treatment. Individuals with drinking problems definitely improve their chances of recovery by seeking help early. Using one or more of several types of psychological therapies, psychologists can help people address psychological issues involved in their problem drinking. A number of these therapies, including *cognitive-behavioral coping skills treatment* and *motivational enhancement therapy*, were developed by psychologists. Additional therapies include 12-Step facilitation approaches that assist those with drinking problems in using self-help programs such as Alcoholics Anonymous (AA). All three of these therapies - cognitive-behavioral coping skills treatment, motivational enhancement therapy, and 12-Step facilitation approaches - have demonstrated their effectiveness through well-designed, large-scale treatment trials. These therapies can help people boost their motivation to stop drinking, identify circumstances that trigger drinking, learn new methods to cope with high-risk drinking situations, and develop social support systems within their own communities.

Many individuals with alcohol problems suffer from other mental health conditions, such as severe anxiety and depression, at the same time. Psychologists can be very helpful for diagnosing and treating these "co-occurring" psychological conditions when they begin to create *impairment*. Further, a drinker in treatment may receive services from many health professionals, and a psychologist may play an important role in coordinating these services.

Psychologists can also provide marital, family, and group therapies, which often are helpful for repairing *interpersonal relationships* and for long-term success in resolving problem drinking. Family relationships influence drinking behavior, and these relationships often change during an individual's recovery. The psychologist can help the drinker and significant others navigate these complex transitions, help families understand problem drinking and learn how to support family members in recovery, and refer family members to self-help groups such as AA.

Because a person may experience one or more *relapses* and return to problem drinking, it can be crucial to have an appropriate health professional such as a trusted psychologist with whom that person can discuss and learn from these events. If the drinker is unable to resolve alcohol problems fully, a psychologist can help with reducing alcohol use and minimizing problems.

Psychologists can also provide referrals to self-help groups. Even after formal treatment ends, many people seek additional support through continued involvement in such groups.

Alcohol-related disorders severely impair functioning and health. But the prospects for successful long-term problem resolution are good for people who seek help from appropriate sources. Psychologists are applying the substantial knowledge they have to help people resolve alcohol problems, and they are working to make treatment services available wherever needed.

Text 4. Daily Alcohol Cuts Risk of Heart Attack, Study Finds

Drinking a glass or two of wine, beer or any other kind of alcohol every day can significantly reduce the risk of suffering a heart attack, according to a large new study that is the first to examine whether drinking occasionally or daily is the best strategy for taking advantage of alcohol's health benefits.

The research also shows clearly for the first time that drinking any kind of alcohol -- not just red wine - can protect the heart.

"What is important is the drinking pattern and not necessarily what the individual is drinking or even the average consumption," said Eric Rimm, associate professor of epidemiology and nutrition at the Harvard School of Public Health in Boston, who helped conduct the study. "It's much more beneficial to have about a drink or two a day."

The new study is the latest installment in a long-running debate over the apparent Jekyll-and-Hyde qualities of alcohol. Alcohol has long been vilified as part of an unhealthful lifestyle. And it clearly causes serious health problems for millions of people who drink heavily, as well as countless deaths from drunken driving and alcohol-fueled assaults.

But researchers first became aware that the purported healing powers of alcohol might have merit when they noticed the "French Paradox" - the seemingly contradictory phenomenon of the French having a surprisingly low rate of heart disease despite their rich diets. That led to speculation that there was something about the prodigious quantities of red wine the French traditionally consumed that protected their hearts.

Studies subsequently found a connection between alcohol consumption and reduced risk of *coronary heart disease*, apparently by raising levels of "good" cholesterol and by reducing the chances that clots will form and cut off blood flow to the heart and brain.

That has led to a debate among public health experts over whether they should not only stop discouraging people from light or moderate drinking, but possibly even begin to encourage them to have a drink regularly.

The new findings appear unlikely to convince skeptics, who fear that any positive words about alcohol will either be misinterpreted as an endorsement of excessive drinking, or used as an excuse for those who abuse alcohol to continue imbibing.

"The thing that really concerns me is the fact that we know that people who abuse alcohol are in denial, and people tend to underestimate how much they drink," said Nicholas Pace, an assistant professor of medicine at New York University Medical Center who serves on the board of the National Council on Alcoholism and Drug Dependence. "I'm not a teetotaler*, but one has to be very careful with this kind of thing."

Robert H. Eckel, a professor of medicine at the University of Colorado Health Sciences Center in Denver who is chairman of the American Heart Association's Council on Nutrition, Physical Activity and Metabolism, was also cautious. "This is a tough issue. I don't know if there's a simple solution here," he said.

Others, however, were less *ambivalent about* the findings.

"This finally puts some numbers to how often you should drink," said R. Curtis Ellison, a professor of medicine at Boston University School of Medicine. "The dangers of that level of drinking are almost zero, and the benefits are striking. Everybody should be told the facts and let them make up their own minds. If you drink a lot, it's bad for you. If you drink a little, it's good for you."

The new data comes from the Health Professionals Follow-Up Study, an ongoing project based at the Harvard School of Public Health that is tracking the health of 38,077 male health professionals across the country while monitoring aspects of their lifestyles.

Researchers said the findings also could apply to women, noting that previous studies have also shown that light to moderate drinking can reduce a woman's risk of heart attack. Research has also indicated, however, that alcohol consumption can boost a woman's risk of developing breast cancer.

After 12 years, the researchers found that those who consumed one or two drinks three to seven days a week had a 32 percent to 37 percent lower risk of suffering a heart attack - the lowest rate among the men. That was independent of age, smoking and exercise habits, diet and family history of heart disease.

Men who increased their alcohol consumption by one drink a day experienced a 22 percent drop in their heart attack risk, the researchers reported in today's New England Journal of Medicine. The research found that as little as half a drink every other day is enough to produce some reduction in heart attack risk.

"This does suggest that alcohol can be a very important part of a healthy lifestyle," Rimm said.

*teetotaller [ti ‘toutlə] трезвенник Syn: *abstainer*

DRUG ABUSE AND DEPENDENCE

Pre-reading task.

1. Discuss the following questions in groups.

What is drug abuse? What are the reasons for turning to drugs? Who are the “victims” of the disease? Why do teenagers start taking drugs? Do you know any symptoms of drug abuse? Are there many groups of drugs? Can drug dependence be treated? What can be done to prevent drug abuse from spreading?

2. While reading the text fill in the chart with the information you can find:

Causes and risk factors	Groups of drugs and their effects	Symptoms	Prevention and possible treatment

Text 1. Overview.

Definition

Use of any drug for purposes other than those for which it is normally intended, or in a manner or in quantities other than directed; drug dependence is the compulsion to continue taking a drug to produce desired effects, or to prevent the onset of ill effects that occur when it is not taken.

Alternative names: drug addiction

Causes, incidence, and risk factors

Drug abuse and dependence occurs with both legal prescription and nonprescription medications, as well as illegal substances. Drug abuse can lead to drug dependence or addiction. This may occur through the progression from experimentation with drugs to their occasional use and then to the development of tolerance and physical dependence. The exact cause of drug abuse and dependence is not known, however, the make-up of the individual, the addictiveness of the drug, peer pressure, emotional distress, anxiety, depression, low self-esteem, and environmental stress are all factors that may play a causative role. Drug dependence may follow the use of drugs for physical pain relief.

Risk factors that predispose people to drug abuse are a lack of mental or emotional resources against stress, a low tolerance for frustration, and the need for immediate relief of tension or distress. Health care professionals are at risk of drug abuse and dependence because of increased access to drugs. Junior high and high school students often begin using drugs as a result of peer pressure. Lack of adequate family support, failure of parental supervision, excess unsupervised free time, and a more tolerant societal attitude have contributed to increased drug use among adolescents. Younger children (toddler through grade school) may first see drugs used by their parents or their friends' parents. These children often grow up in an environment of illicit drug use.

There is also an attitude fostered by television, radio, and magazine advertising, and even somewhat by the medical profession, that medications are available for every problem to make a person feel better. The attitude, unfortunately, is extended by younger people to include illegal drugs.

Signs of school age children on drugs may include any of the following:

1. A change in the child's friends, a new group
2. Seclusive behaviour
3. Long unexplained periods away from home
4. Lying
5. Stealing
6. Involvement with the law
7. Deteriorating family relations
8. Obvious toxic state: drunk, delirious, incoherent, unconscious
9. Changes in behavior and normal attitude
10. Decreased school performance

Commonly abused substances include:

Opioids or narcotics include heroin, opium, codeine, meperidine, (Demerol), hydromorphone (Dilaudid), methadone, and others. These drugs have a *sedative effect*, but also cause *euphoria-like* states and produce a physical and psychological dependence.

Central nervous system stimulants include amphetamines, cocaine, dextroamphetamine, and methamphetamine. These drugs have a stimulating effect and produce tolerance and psychological dependence.

Central nervous system depressants include barbiturates such as amobarbital, pentobarbital, secobarbital; Benzodiazepine; chloral hydrate; and paraldehyde. They produce a depressant and sedative effect as well as physical and psychological dependence.

Cannabis includes marijuana, hashish, and THC (tetrahydrocannabinol), and produces psychological but not physical dependence.

Hallucinogens include LSD, mescaline, psilocybin, and phencyclidine (PCP). They have hallucinogenic properties and can produce psychological dependence.

Acute drug intoxication and *drug overdose* may be accidental or intentional. Drug withdrawal symptoms can occur when use of a substance is stopped or reduced. Withdrawal symptoms vary, depending on the abused substance. The onset of withdrawal symptoms depends on the length of time the drug normally stays within the body. Benzodiazepine (Valium and similar drugs) withdrawal will occur 5 to 7 days after the drug is reduced or stopped. Opiate withdrawal starts between 6 to 12 hours after the last use. Drug intoxication, overdose, and withdrawal can be life-threatening situations.

The incidence of drug abuse and dependence is widespread and affects all levels of society, causing a major public health problem.

Prevention

Drug education programs have a preventive role for some children and teenagers who are able to resist peer pressure. At present, drug prevention education is not widespread, and the long-term success of these programs is not known.

Symptoms

OPIOID SYMPTOMS: needle marks on the skin scars from skin abscesses rapid heart rate constricted pupils coma, respiratory depression in high doses respiratory arrest CENTRAL NERVOUS SYSTEM DEPRESSANT SYMPTOMS slurred speech lack of coordination decreased attention span impaired judgment mood swings double vision dizziness aggressive or suicidal behavior CANNABIS SYMPTOMS: panic and paranoid reactions	CENTRAL NERVOUS SYSTEM STIMULANT SYMPTOMS euphoria (exaggerated feeling of well-being) dilated pupils rapid heart rate (tachycardia) anxiety restlessness hyperactivity aggressive or violent behavior fever convulsions hallucinations stroke HALLUCINOGEN SYMPTOMS anxiety frightening hallucinations depression schizophrenia behavior paranoid delusions (with PCP)

Note: Symptoms vary depending upon the abused substance. High blood pressure may also be associated with drug abuse.

Signs and tests

Toxicology screens (drug testing) done on blood and urine specimens can reveal the presence of many chemicals and drugs in the body. The sensitivity depends upon the substance itself, when the substance was taken, and the testing laboratory.

EXERCISES.

I. Vocabulary exercises.

1. Practice the pronunciation of the following words:

adolescent; illicit; seclusive; deteriorate; incoherent; euphoria; stimulant; cannabis; marijuana; hallucinogens; abscess; respiratory; tachycardia; dilated; paranoid; suicidal; schizophrenia; delusion; sedative.

2. Find Russian equivalents to the following words and word combinations. Make sentences of your own with them:
the compulsion to continue; onset; causative role; predispose smb to; frustration; increased access to drugs; delirious; drug overdose; withdrawal symptoms; impaired judgment; life-threatening situations.

3.Find in the text antonyms to the following words and word combinations and then use them in the sentences:
legal drug use; high self-esteem; inadequate; decreased; improvement; stimulating effect; dilated pupils.

4. Find the matches.

euphoria	предрасполагать
paranoid	стимулятор
hashish	бредовый
onset	расширяться
deterioration	опиат
dilate	абсцесс
seclusive behavior	марихуана
schizophrenia	параноик
marijuana	уход от коллектива
delirious	гашиш
predispose	эйфория
adolescent	ухудшение
opiate	подросток
abscess	приступ
stimulant	шизофрения

5. Find the English equivalents to the following words and word combinations:
развитие толерантности и физической зависимости; склонность к уединению; облегчение физической боли; сниженная успеваемость в школе; иметь седативный эффект; острая интоксикация; профилактическая мера; абстинентный синдром; суицидальное поведение; головокружение; беспокойство; тахикардия.

Speech exercises.

1. Compare your answers to the questions of pre-reading task with the information of the text. Ask each other questions concerning this topic.
2. Make dialogues:
   - between the doctor the mother of a drug addict;
   - between a teenager who occasionally takes drugs and his parent;
   - between two teenagers - a drug addict and his friend;
   - between a social worker and a drug addict who has involvements with the law.
3. Read texts for additional reading and then write an essay:
   - What can be done to help to prevent the spread of drug and alcohol abuse in our country?
   - What should we do to help our friends who have become drug addicts.
   - Modern health care and drug addiction.

4. Read the text and render it in English.

ТЭС в лечении алкоголизма и наркомании.

Известно, какая огромная роль отводится продуцируемым мозгом эндорфинам (endorphin) в гомеостазе (homeostasis) организма. Известно также, что патогенез многих заболеваний непосредственно связан с нарушением продукции, обмена или рецепции эндорфинов клетками мозга. Это особенно относится к такой патологии, как алкоголизм, наркомания, токсикомания. Во всех этих случаях отмечено выраженное в разной степени угнетение активности эндорфинной системы мозга.

Естественно предположить, что стимуляция этой системы могла бы служить средством патогенетической терапии в наркологии. Проблема состояла в том, чтобы найти такой метод, который отвечал бы всем требованиям практического применения, т.е. был бы неинвазивным, селективным, безопасным, не обладающим побочными эффектами, простым в применении и конечно, экономически выгодным. Эффективный метод, отвечающий этим требованиям, был разработан в результате длительных исследований в Институте физиологии им. Павлова Российской академии наук (Санкт-Петербург).

Эффективный метод активации эндорфинной системы мозга получил название транскраниальной электростимуляции (метод ТЭС).

Исследования показали, что при лечении методом ТЭС эффективно устраняется алкогольный абстинентный синдром, причем действие ТЭС превосходит эффект диазепинов. При использовании этого метода в стадии ремиссии нормализуется ряд биохимических показателей крови, которые часто рассматриваются как маркеры алкоголизма.

Применение ТЭС имеет ограниченный круг противопоказаний, не дает побочных эффектов.

Additional reading.

Text 1. Why do some teens do drugs?

Drugs are done by teenagers for a number of reasons.
They may do it:

- as a way of escaping stress;
- for the euphoria;
- because it is socially acceptable;
- because of peer pressure;
- to follow social trends;
- because their parents did it or do it, and/or to rebel.

People who are struggling to meet people's expectations may use alcohol, among other drugs, to escape stress. Stressful work, school and work deadlines, juggling school and work, exams and relationship troubles may lead to people turning to drugs as a way to "chill".

The media constantly shows pictures of the famous consuming alcohol and / or smoking or reports of the use of "harder" drugs by celebrities. This is one factor that leads to drugs being seen socially acceptable.

Also the Australian culture and way of life can be blamed on this. Firstly almost every celebration, from the Melbourne Cup to a backyard birthday party, features alcohol. Secondly, it is seen as a "manly" thing to do - drinking that is. Thirdly, sport can be blamed - the constant promotion at sporting events of alcohol is partly responsible for giving teens the idea that it's okay to do drugs (alcohol is a drug).

It may be considered in some groups to be "wussy" to refuse to drink or do whatever particular drug is going around. If a teen in a group refuses to smoke pot while the rest of the group does, the pot-free teen will probably be harassed and hassled until he or she gives in.

Text 2. Drug abuse. Substances.

Marijuana

Marijuana ("grass"; "pot"; "Mary Jane"; "dweebidge"; "reefer"; "joint"; "hashish"; "cannabis").

An estimated 50 million Americans have used marijuana at least once. Next to tobacco, and alcohol in some areas, marijuana is the most popular substance chosen by young people for regular use. The effects of marijuana may be noted within seconds to several minutes after inhaling the smoke (from a joint or a pipe) or within 30 to 60 minutes after ingestion (eating foods containing marijuana such as brownies).

The primary effects of marijuana are behavioral, because the drug affects the central nervous system (CNS). Popular use of marijuana has arisen from its effects of euphoria, sense of relaxation, increased visual, auditory, and taste perceptions.

Marijuana has specific effects that may decrease one's ability to perform tasks requiring a great deal of coordination (such as driving a car). Visual tracking is impaired and the sense of time is typically prolonged. Learning may be greatly affected because the drug diminishes one's ability to concentrate attention. Studies have shown that learning may become "state-dependent" meaning that information acquired or learned while under the influence of marijuana is best recalled in the same state of drug influence.

Regular users, upon discontinuation of marijuana, may experience withdrawal effects. These may include agitation, insomnia, irritability, and anxiety.

Stimulants

Stimulants ("speed"; "crack"; "coke"; "snow"; "crank"; "go"; "speedball"; "crystal";"cross-tops"; "yellow jackets")

Cocaine

The abuse of cocaine has strikingly increased in recent years. Its increasing popularity with American adolescents may be attributed to several factors including use of the drug by adult role models such as athletes, entertainers, businessmen, and professionals. Cocaine may be inhaled through the nose ("snorting") or dissolved in water and administered intravenously. When mixed with heroin, in a single syringe for IV use, the combination is referred to as a "speedball."

Smoking produces an instant and intense euphoria attractive to abusers. Other effects include local anesthesia, potent CNS stimulation, feelings of increased confidence, energy, accompanied with decreased inhibitions. The drug is considered both physically and psychologically addicting. Regular users may exhibit mood swings, depression, sleep problems, memory loss, social withdrawal, and loss of interest in school, work, family, and friends.

Narcotics / Opiates

Drugs derived from opium (morphine, codeine); semisynthetic drugs (oxycodone, hydromorphone); and fully synthetic drugs (meperidine, propoxyphene, and methadone) are all considered narcotics. Although the popularity of these drugs has decreased in recent years, they are still abused for their euphoric effects.

Because the most popular route of administration of these drugs is IV, the associated health concerns specific to IV drug use and sharing needles or using contaminated needles (such as hepatitis, HIV, AIDS) must be considered.

TREATMENT OVERVIEW

Success in becoming "drug free" is best achieved through formal programs in conjunction with community-based support programs such as Narcotics Anonymous. Comprehensive residential treatment programs monitor and address potential withdrawal symptoms / behaviors, incorporate behavior recognition and modification programs, include psychotherapeutic treatments both for the person (and perhaps family) and in group settings, have a prolonged after-care component, and facilitate peer support. Drug addiction is a serious and complicated health condition that requires both physiological and psychological treatment and support.

Text 3. Other Types of Addiction.

Pre-reading task:
Discus the following questions in pairs and then report back to the whole class.

1. Do you know any other types of addiction? If yes, what are they?
2. Do you know anyone suffering from these types of addiction?
3. Do you think there are any ways to help such people to resolve their problem?

Now read the following text and compare your point of view with the point of view of the author.

Internet Addiction

"I began to suspect that I had an Internet addiction problem when I would get up at 3 a.m. to surf the net, and then I talked to a friend who hadn't been to bed yet. He was still surfing the Internet at 3 o'clock."

The information on this page indicates that people using the Internet may be subject to a new illness in our society, Internet addiction. I stumbled across this subject when surfing the net and read the article below in the Air Force News Service.

Is the Internet affecting your life in a negative way? Do you spend more time on the Internet when you should be doing something else?

Included on this page is the article I mentioned, from AFNS, a listing of symptoms, and where help can be found for this new form of addiction.

Internet surfing could become an addiction by Susan Griggs Keesler News staff

KEESLER AIR FORCE BASE, Miss. (AFNS)

The Internet is an amazing information resource. Students, teachers and researchers use it as an investigative tool. Physicians use it to learn more about unfamiliar diseases and the latest medical developments. Ordinary folks use it for shopping, banking, bill-paying and communicating with family and friends. People all over the globe use it to connect with individuals of other countries and cultures. Even journalists use it to find information for stories - like this one.

"It's opened up a whole new world," a friend explained. "You never know exactly where the journey will take you. Doors open and you take off in new directions. You can learn about anything - I mean anything! And you never have to be lonely - there's always someone out there to connect with."

But for some people, the computer world rivals their real world. Some people choose to commune with a computer, rather than their spouses and children. While they expand their horizons electronically, they insulate themselves from intimate settings and relationships. Internet abuse has been cited as a contributing factor in the disintegration of marriages and families and the collapse of promising careers.

Dr. Ivan Goldberg, a New York City psychiatrist who coined the term "Internet Addiction Disorder," explained IAD is not a recognized medical addiction like alcoholism, but "more like an out-of-control behavior that threatens to overwhelm the addict's normal life.

"Such use continues despite knowledge of a persistent or recurrent physical, social or psychological problem caused or exacerbated by net use, such as sleep deprivation, marital difficulties, lateness for early morning appointments, neglect of occupational duties and feelings of abandonment," Goldberg said.

"Internet addiction has gained credibility among mental health professionals as a clinically significant disorder which negatively impacts social, occupational, family and financial functioning," said Dr. Kimberly Young, director of the Center for On-line Addiction at the University of Pittsburgh-Bradford, and reviewer of more than 400 IAD cases.

"Anyone with access to a modem and the Internet may become addicted," Young warned. She said home-based computer users are most at risk of developing IAD. Contrary to the stereotype

of the computer nerd, a typical addict is a middle-aged female with limited education, although persons of all ages and social groups are prominent in her study.

Dr. Nancy Wesson, a clinical psychologist in Mountain View, Calif., pointed out people can develop behavioral addictions like IAD even when there's no true physiological dependence. She asserted obsessive net-surfing can be just as addictive as excesses of other ordinary activities such as eating, sex, work and exercise.

Bill Cooley, a drug demand reduction specialist with Keesler's mental health clinic, believes the anonymity of Internet communication, which allows a person to escape from reality, has great potential for compulsive behavior or misuse.

"Many individuals go on-line and gain a sense of acceptance from people they don't even know," he suggested. "It's a coming-home feeling that can entice people to the detriment of family, home, career and health."

Some doctors are skeptical of specialists who apply psychiatric terms such as "addiction" or "dependence" to what may seem to be a harmless hobby, but Cooley stressed, "Hobbies don't become harmful in terms of the attention they take away from important aspects of our lives - addictions do."

Cooley, who has extensive experience counseling individuals with substance abuse problems, indicated, "I don't have any studies or data to prove it, but it wouldn't surprise me to find that alcoholics and drug addicts move to the Internet in their search for validation, love or a sense of importance."

Is "surfing the net" a hobby or an addiction? You may have a problem if you have these symptoms:

- You neglect important family activities, social events, work responsibilities, academic projects or health concerns to spend hours on the Internet;
- A significant person, such as a boss, close friend or partner, has complained you're spending too much time or money on the Internet;
- You're constantly anticipating your next on-line session;
- It becomes impossible to cut back on your Internet time;
- You're determined to spend a brief period on-line, only to discover later that several hours have passed;
- You check your e-mail compulsively;
- You develop cravings and withdrawal symptoms when you're away from the computer;
- You're skipping meals, classes or appointments to get on the Internet;
- You'd rather talk to people on-line than face-to-face;
- You sleep less than five hours a night so you can spend more time on-line;
- Using the online services everyday without any skipping;
- Losing track of time after making a connection;
- Goes out less and less;
- Spending less and less time on meals at home or at work, and eats in front of the monitor;
- Denying spending too much time on the Net;
- Others complaining you're spending too much time in front of the monitor;
- Checking on your mailbox too many times a day;
- You think you have got the greatest web site in the world and dying to give people your URL;
- Logging onto the Net while already busy at work;
- Sneaking online when spouse or family members not at home, with a sense of relief.

Since Internet Addiction Disorder is a relatively new mental health concern, few self-help resources are available. Ironically, there are some on-line support groups designed to wean people from the Internet.

Questions for discussion:

1. Are you a computer nerd?
2. How many hours a day (week) do you spend surfing the Internet?

3. What sites are most interesting for you? Do you agree that “you never know where the journey will take you”?
4. What do you usually use the Internet for?
5. How do you prefer to communicate – face-to-face or through the Internet? Why?
6. Do you think that we can apply a medical term ‘addiction’ to this phenomenon?

CVS DISEASES.

Text 1. Heart Attack & Atherosclerosis Prevention

Pre-reading task: Before reading the text, look at the words given below and check their meaning and pronunciation in the dictionary:

cholesterol plaque atherosclerosis ulcer oxygen supply lower extremities stroke heart attack coronary heart disease angina pectoris heart failure exertion vasodilators to be given sublingually myocardial infarction blood clot rupture scar tissue cardiac arrest coronary artery bypass surgery anti-ischemic aorta

What is atherosclerosis?

Atherosclerosis is a gradual process whereby hard *cholesterol* substances (*plaques*) are *deposited* in the walls of the arteries. Cholesterol plaques cause hardening of the artery walls and narrowing of the *artery lumen* (the inner diameter of the artery). Arteries carry blood that is enriched with oxygen and nutrients to the vital organs such as the brain, heart, kidneys, and liver. Arteries also transport blood to other tissues such as the fingers, toes, nerves, bones, skin, and muscles. Healthy arteries can deliver an ample supply of blood to the organs and tissues. In contrast, arteries that are narrowed by *atherosclerosis* have difficulty delivering blood to the parts of the body they supply. For example, atherosclerosis of the arteries in the legs causes poor circulation in the *lower extremities*. Poor circulation in the lower extremities can lead to deficient wound healing, leg *ulcers*, and pain. Atherosclerosis can also cause the complete blockage of an artery from a blood clot. Complete blockage of an artery interrupts *oxygen supply*, resulting in tissue injury or death. Thus, the blockage of an artery that furnishes blood to the brain can lead to *stroke (*death of brain tissue), and the blockage of the arteries to the heart can result in a *heart attack* (death of heart muscle).

What is coronary atherosclerosis?

Coronary atherosclerosis refers to the hardening and narrowing of the coronary arteries. Coronary arteries supply the blood that carries oxygen and nutrients to the heart muscle. When coronary arteries are narrowed or blocked by atherosclerosis, they cannot deliver an adequate amount of blood to the heart muscle. Disease caused by the lack of blood supply to heart muscle is called *coronary heart disease.* Coronary heart disease (CHD) includes heart attacks, sudden unexpected death, chest pain (*angina*), abnormal heart rhythms, and *heart failure* due to weakening of the heart muscle.

What is angina pectoris?

Angina pectoris is chest pain or pressure that occurs when the oxygen supply to the heart muscle cannot keep up with demand. Most commonly, the inadequate supply of oxygen is due to narrowing of the coronary arteries by atherosclerosis. When coronary arteries are narrowed by more than 50% to 70%, the arteries cannot increase the supply of blood to the heart muscle during *exertion* or other periods of high oxygen demand. An *insufficient supply* of oxygen to the heart muscle causes chest pain (angina). Chest pain that occurs with exercise or exertion is called exertional angina.

Exertional angina usually feels like a *pressure, heaviness, squeezing, or aching* across the chest. This pain often travels to the neck, jaw, arms, back, or even the teeth. Exertional angina typically lasts from 1 to 15 minutes and is relieved by rest or by placing a nitroglycerin tablet under the tongue. Both resting and nitroglycerin decrease the heart muscle's demand for oxygen,

thus relieving angina. Exertional angina may be the first warning sign of advanced coronary atherosclerosis.

Some individuals experience angina at rest. Angina at rest may be due to a spasm of the coronary arteries (a condition called Prinzmetal's angina). It can also indicate a critical narrowing of the coronary arteries since the heart is not receiving enough oxygen even at rest. Unlike a heart attack, there is no permanent muscle damage with either type of angina.

Angina pectoris is an episode of chest pain, often called *precordial* pain (precordial means in front of the chest), resulting from a temporary difference between the supply and the demand of oxygen to the heart muscle. Angina can be the result of low oxygen levels in the blood (from smoking or respiratory disease), restricted blood flow to the heart (coronary artery disease), or an increase in the work of the heart beyond normal levels. For acute attacks of angina, nitroglycerin *is given sublingually*. This drug, one of several called nitrates, is a powerful *vasodilator* and muscle relaxant.

What is a heart attack?

A heart attack *(myocardial infarction*) is the death of heart muscle due to the sudden and complete blockage of a coronary artery by a clot. A coronary artery blockage usually occurs in arteries that are loaded with cholesterol plaques. A plaque can *rupture* and initiate the formation of a *blood clot* next to it. A blood clot can completely block blood flow through a coronary artery and deprive the heart muscle of needed nutrients and oxygen. The heart muscle then dies, which produces a heart attack.

The severity of a myocardial infarction (also known as heart attack) depends on the size of the artery that is blocked and the extent of the blockage. If the blocked artery is small, the result may be death of only a small portion of the heart immediately fed by the artery. After *scar tissue* forms, the patient may be able to resume completely normal activity.

An innovative method of treatment is transmyocardial laser revascularization (TMLR). A laser makes holes in the heart muscle to induce angiogenesis (growth of new blood vessels). Gene therapy (giving DNA or viruses containing DNA to promote expression of factors that lead to angiogenesis) is another new technique to restore damaged heart muscle.

Heart Attack & Atherosclerosis Prevention

The most common symptom of a heart attack is pain and pressure in the chest that is unrelieved by rest or nitroglycerin. In some individuals, however, a heart attack can be "silent," which means the person does not experience chest pain or pressure and is unaware they are having a heart attack. In survivors of silent heart attacks, doctors can usually detect evidence of prior heart muscle damage by ECG and echocardiogram studies.

A heart attack can trigger the sudden onset of ventricular fibrillation. Ventricular fibrillation is a chaotic electrical rhythm of the heart that causes *cardiac arrest* (the heart stands still and ceases to pump blood). Ventricular fibrillation causes permanent brain damage and death unless a normal heartbeat can be restored within five minutes of its onset. Of the 1 million Americans who suffer heart attacks annually, approximately 400,000 of them die suddenly and unexpectedly from ventricular fibrillation before the victims can reach any medical assistance or the emergency room. For these people, the first sign of coronary heart disease is sudden unexpected death.

Unlike angina, the heart muscle damage from a heart attack is permanent. After a heart attack, the damaged portion of the heart is left with a scar. If the amount of heart muscle damage and the area of scarring are small, the performance of the heart as a pump will not be significantly impaired. However, repeated heart attacks or a heart attack with extensive heart muscle damage can weaken the heart and cause heart failure. People with heart failure experience shortness of breath, tolerate exercise poorly, and lack vigor because their weakened heart muscle cannot pump enough blood to keep their bodies healthy.

Why is preventing coronary atherosclerosis important?

Coronary atherosclerosis is the major cause of heart attacks. Heart attacks are the major cause of sudden unexpected death among otherwise healthy adults in the prime of their lives. Heart

attacks are also a significant cause of heart failure in this country. Heart failure considerably decreases the patient's longevity and quality of life. In dollar terms, coronary heart disease is costly. The total cost of coronary artery bypass surgery, coronary angioplasty and stenting, medications, and hospitalizations exceeds 50 billion dollars annually.

How common is coronary atherosclerosis?

More than 5 million Americans know they have coronary atherosclerosis. They are aware of their condition because they have either: 1) already suffered a heart attack; 2) are being treated with medications for angina pectoris; 3) have already undergone coronary artery bypass graft surgery to overcome coronary artery narrowing or blockage; or 4) have already undergone coronary artery angioplasty with stent placement to alleviate coronary artery blockage. For every person who knows they have coronary heart disease, many more have atherosclerosis but are unaware of their condition. One or more of their coronary arteries may have already narrowed by more than 50%, but they have not yet developed angina or other symptoms of coronary heart disease. These individuals are at risk of suffering heart attacks, angina, and sudden death.

When does the coronary atherosclerosis process begin?

Although the coronary arteries are wide open at birth, the atherosclerosis process begins early in life. Between the ages of 10 and 20, "fatty streaks" are already being deposited on the inner lining of the coronary arteries. Over the years, some of these fatty streaks grow into larger cholesterol plaques that can protrude into the artery lumen and harden the artery walls. Many men and women between the ages of 20 and 30 typically are unaware that their coronary arteries are gradually accumulating cholesterol plaques. But by ages 45 to 50, many people have developed enough atherosclerosis to put them at risk for coronary heart disease.

Are atherosclerosis and heart attacks preventable?

Coronary atherosclerosis is both preventable and reversible. By adopting proper life style modifications and by taking medications, a person can:

1.Reduce or stop the formation of new cholesterol plaques on the artery walls;
2.Reduce existing cholesterol plaques on the artery walls;
3.Widen narrowed arteries; and
4.Prevent the rupture of cholesterol plaques, which initiates blood clot formation.

Atherosclerosis prevention should start early, preferably during childhood and adolescence. Most scientists believe that preventing atherosclerosis is more effective than trying to reverse established blockages or getting rid of plaques in the arteries. Therefore, children and adolescents should be taught lifetime habits of regular exercise, avoidance of smoking, and good nutrition.

Have most people done enough to prevent atherosclerosis and heart attacks?

Unfortunately, many Americans have not taken adequate steps to prevent atherosclerosis. Reasons for this failure include:

1.Lack of awareness that they already have coronary atherosclerosis, and ignorance that coronary atherosclerosis and heart attacks are preventable;
2.Lack of awareness of their blood cholesterol levels and profiles;
3.Unwillingness or inability to quit cigarette smoking;
4.High blood pressure or diabetes mellitus that are either undiagnosed or inadequately controlled;
5.Lack of exercise, an excess of fat and cholesterol in their diet, and inability to lose excess weight; and
6.Failure to take full advantage of medications that improve cholesterol profiles, usually out of fear of potential side effects.

What are the risk factors for coronary atherosclerosis and heart disease?

Well-known risk factors for coronary atherosclerosis and heart attacks are:

1.Elevated levels of LDL cholesterol (the "bad" cholesterol) in the blood;

2.Family history of early coronary heart disease, including a heart attack or sudden death before age 55 in the father or other male first-degree relative, or before age 65 in the mother or other female first-degree relative;

3.Cigarette smoking;

4.Diabetes mellitus;

5.High blood pressure; and

6.Low levels of HDL (the "good" cholesterol) in the blood.

7.Sedentary lifestyle

What is coronary artery disease?

Coronary artery disease (CAD) is arteriosclerosis of the inner lining of the blood vessels that supply blood to the heart. CAD is a common form of heart disease and is a major cause of illness and death. CAD begins when hard cholesterol substances (plaques) are deposited within a coronary artery. (The coronary arteries arise from the aorta, which is adjacent to the heart.) The plaques can cause a tiny clot to form, which can obstruct the flow of blood to the heart muscle. Symptoms of CAD include 1) chest pain (angina pectoris) from inadequate blood flow to the heart; 2) heart attack (acute myocardial infarction), from the sudden total blockage of a coronary artery; or 3) sudden death, due to a fatal rhythm disturbance.

Treatment guidelines for coronary artery disease (CAD) begin with controlling risk factors, such as smoking, *obesity*, and lack of exercise. Daily aspirin therapy (to prevent formation of clots) and drug therapy to lower cholesterol (HMGs or “statins” reduce the production of cholesterol in the liver) are also important to prevent heart disease After the occurrence of an MI, patients may require maintenance and *anti-ischemic* therapy with drugs called *beta-blockers*, which reduce the force and speed of the heartbeat and lower blood pressure. Other drugs, such as nitrates and calcium channel blockers, cause dilatation of blood vessels, making it easier for the heart to pump blood through vessels.

Surgical treatment of CAD is an open-heart operation called *coronary artery bypass grafting*, or CABG. Cardiologists perform percutaneous transluminal coronary angioplasty (PTCA), in which catheterization with balloons opens clogged coronary arteries.

What is the purpose of screening tests for CAD?

In many patients, the first symptom of CAD is myocardial infarction or sudden death, with no preceding chest pain as a warning. For this reason, doctors perform screening tests to detect signs of CAD before serious medical events occur. Screening tests are of particular importance for patients with risk factors for CAD. These risk factors include a family history of CAD at relatively young ages, an abnormal serum cholesterol profile, cigarette smoking, elevated blood pressure (hypertension), and diabetes mellitus.

What are common initial screening tests for CAD?

Initial screening for CAD commonly involves stressing the heart under controlled conditions. These stress tests are able to detect the presence of flow-limiting blockages in the coronary arteries, generally in the range of at least a 50% reduction in the diameter of at least one of the three major coronary arteries. There are two basic types of stress tests; those that involve exercising the patient to stress the heart (exercise cardiac stress tests), and those that involve chemically stimulating the heart directly to mimic the stress of exercise (physiologic stress testing). Physiologic stress testing can be used for patients who are unable to exercise.

Tasks:

1. Explain the meaning of the following words and expressions in English:

stroke, heart attack, artery lumen, scar tissue, cardiac arrest, coronary artery bypass grafting.

2. Find some information in the text about the signs of heart failure and CAD; characteristics of pain in angina pectoris; new methods of treatment of CVS diseases; risk factors for CVS diseases and ways of prevention.

Texts for additional reading, translation and discussion.

Text 1. Coronary Artery Disease. Screening Tests

Radionucleide Stress Test

Radionucleide stress testing involves injecting a radioactive isotope (typically thallium or cardiolyte) into the patient's vein after which an image of the patient's heart becomes visible with a special camera. The radioactive isotopes are absorbed by the normal heart muscle. Nuclear images are obtained in the resting condition, and again immediately following exercise. The two sets of images are then compared. During exercise, if a blockage in a coronary artery results in diminished blood flow to a part of the cardiac muscle, this region of the heart will appear as a relative "cold spot" on the nuclear scan. This cold spot is not visible on the images that are taken while the patient is at rest (when coronary flow is adequate). Radionucleide stress testing, while more time-consuming and expensive than a simple ECST, greatly enhances the accuracy in diagnosing CAD.

Stress Echocardiography

Another supplement to the routine ECST is stress echocardiography. During stress echocardiography, the sound waves of ultrasound are used to produce images of the heart at rest and at the peak of exercise. In a heart with normal blood supply, all segments of the left ventricle (the major pumping chamber of the heart) exhibit enhanced contractions of the heart muscle during peak exercise. Conversely, in the setting of CAD, if a segment of the left ventricle does not receive optimal blood flow during exercise, that segment will demonstrate reduced contractions of heart muscle relative to the rest of the heart on the exercise echocardiogram. Stress echocardiography is very useful in enhancing the interpretation of the ECST, and can be used to exclude the presence of significant CAD in patients suspected of having a "false-positive" ECST.

What if patients are unable to exercise adequately for an ECST?

Many patients are unable to exercise maximally for stress testing due to a variety of conditions including arthritis, severe lung disease, severe cardiac disease, orthopedic conditions, and diseases of the nervous system. In such patients, pharmacological stress testing is often employed.

Physiologic Stress Test

During a physiologic stress test, certain medications are administered which stimulate the heart to mimic the physiologic effects of exercise. One of these medications is dobutamine, which is similar to adrenaline. Dobutamine is carefully administered to gradually increase the heart rate and strength of the contractions of the heart muscle. Simultaneously, echocardiography or radionucleide imaging is performed. Alternatively, a medicine called adenosine is administered, which simulates the physiology of the coronary artery circulation during exercise. Adenosine is combined with radionucleide isotope imaging to provide a very accurate test for the detection of significant CAD. Pharmacological stress testing is commonly performed in patients who are thought to be at high risk for significant CAD and who are scheduled for major non-cardiac surgical procedures. These patients are often unable to perform exercise stress testing due to the underlying condition for which they require surgery. In this setting, pharmacological stress testing is invaluable in assessing the cardiac risk of patients prior to surgery.

Are there other tests for CAD that are noninvasive?

Ultrafast CT. A new (and controversial) noninvasive test for the detection of CAD is electron beam computerized tomography, also known as Ultrafast CT. Unlike the above mentioned stress tests that measure the heart's physiology, Ultrafast CT is designed to measure calcium deposits in the coronary arteries.

Text 2. Study Links Genes to Heart Disease

DALLAS — Scientists say they have found evidence linking three genes to premature heart disease, which could be a step toward a better screening procedure for families at risk.

Using a new technique called high throughput microarray genotyping to sift through some 50,000 genes, the researchers found that three of them produce thrombospondin. The protein governs blood's ability to clot, a factor in heart disease.

The study in Tuesday's issue of the journal Circulation found that families with a variant of a gene called thrombospondin-4 were 89 percent more likely to have a premature heart attack compared with those who had a normal gene of the same type.

Researchers also found that a variant of the gene thrombospondin-1 was 10 times more likely to form blood clots, while a variant of another gene – thrombospondin-2 – actually reduced the risk of heart attack by 69 percent.

The study looked at 400 families at 15 medical centers across the United States.

Dr. Eric Topol, the study's author and a chairman of cardiovascular medicine at the Cleveland Clinic Foundation, said the study was just a first step in the quest to find the root causes of heart disease.

"The hunt for the genes to explain this disease has actually not gone too far yet," Topol said. "We know there's something going on. Each of these variants is making very abnormal proteins."

Topol said the research could lead to a screening procedure to identify at-risk families at an early age. He said the next step is for others to replicate his findings and show the cause-and-effect relationship between the suspect genes and heart illness.

Experts said the study suggested that researchers were on the right track.

"There are millions of segments of genes. This is just one segment," said Dr. David Fischman, a cardiologist and an assistant professor of medicine at the Thomas Jefferson Medical College in Philadelphia.

He said research is farther along on genetic markers that could predict cancer risks. Fischman predicted ethical battles over whether to manipulate genetic codes in an effort to stop diseases, citing controversy surrounding this week's claim by a Massachusetts company that it had cloned a human embryo.

"This (gene therapy to prevent heart attacks) won't raise as much as that, but it will probably raise considerable controversy," Fischman said.

Text 3. Hypertension In The Elderly - Deserves More Attention

Dr. Marvin Moser, Clinical Professor of Medicine at Yale University, recently reviewed in a medical publication the topic of high blood pressure (hypertension) in octogenarians (people in their 80's). In this article, I will summarize some of the very important points that he made.

Hypertension (defined as a blood pressure over 140/90 mm Hg) affects more than two out of three individuals over 75 years of age. However, there has been a tendency not to treat these elevations in blood pressure with blood pressure lowering (*anti-hypertensive*) medications. This tendency is largely due to a common misconception that a normal *systolic pressure* is "100 plus your age." Thus, based on this mistaken idea, a systolic blood pressure of 170 in a 70-year-old person would wrongly be considered normal. Furthermore, there is the valid consideration that a too rapid or too great of a reduction of blood pressure may be poorly tolerated in older people. In fact, studies have shown that *mild hypertension* is often not treated in this age group. For example, only 25 % of patients with systolic pressures as high as 180-185 mm Hg currently are being treated.

To look further at the significance of this situation, Dr. Moser reviewed the results of several large treatment trials. He collected information on more than 700 octogenarians with hypertension who were treated with blood pressure lowering medications. These data were compared to the data in a similar number of octogenarians who were not treated. Analysis of the data revealed that treatment with blood pressure lowering (anti-hypertensive) medications reduced the risk for strokes and heart failure by 35%. Further, the incidence of other cardiovascular events (for example, heart attacks) was reduced by 20%. In addition, Dr. Moser pointed out that in these large studies, the blood pressure did not consistently reach a goal of less than 140/90. Nevertheless, an average reduction in systolic pressure of only 12-15 mm Hg was

enough to achieve these cardiovascular benefits. When treating the elderly for hypertension, it is also necessary to consider the other medical conditions that they may have. Some of these conditions may *make* the patients more *prone to* side effects from the medications. However, modifying the goal of blood pressure reduction, as noted above, can help avoid the side effects. Therefore, it is recommended that these medications be started at low doses and increased slowly to avoid a too rapid or excessive lowering of blood pressure. Furthermore, it is important to measure the blood pressure in the elderly while they are standing in addition to while they are sitting or lying. You see, older patients may have a tendency to develop *postural hypotension* (excessively low blood pressure in the standing position). The postural hypotension can cause episodes of lightheadedness or falling. To remedy this situation, the doctor might recommend lower doses of anti-hypertensive medications. The goal would still be to decrease an elevated sitting or lying blood pressure but to a lesser degree to avoid an excessively low standing blood pressure (the postural hypotension).

Finally, it is suggested not to lower the *diastolic* (lower number) pressure below 55-60 mm Hg. Such a decrease may increase side effects by reducing the circulation of blood to the tissues of the body. All of this information demonstrates that hypertension in the elderly is a significant problem that deserves more attention.

Text 4. Heart surgery in womb success

Jamie Maguire is doing well after surgery

A new type of life-saving heart operation has been successfully performed on a baby in the womb.

The micro-surgical technique allowed the mother to carry her child to full-term, avoiding complications associated with *premature births*.

It also increased the chance of normal heart development and function in the baby.

The technique, called pulmonary valvuloplasty, has been developed by specialists from Hammersmith and Royal Brompton Hospitals in London. It is used to unblock the *pulmonary valve*, which when working normally allows blood to flow from the right ventricle of the heart to the lungs.

However, if the valve fails to develop properly in the unborn child, it can become sticky and prevent normal blood flow through the chambers of the heart.

This prevents growth of one side of the heart and may cause life-threatening complications that put the unborn baby's life at risk.

Even if the child survives to birth it may be plagued by major health problems.

Rare operation

Until now there have only ever been 14 reported world-wide attempts to perforate or stretch *foetal cardiac valves* - and all but one of these have been on a different valve which leads to the *aorta*.

Only half of these have been technically successful with just one long-term survivor.

The UK team, led by Dr Helena Gardiner from the Centre for Fetal Care at Queen Charlotte's, operated on an unborn baby with circulation problems 28 weeks into the pregnancy. They carried out the surgery *under local anaesthetic* through the mother's abdomen using ultrasound technology for guidance.

The surgeons used a needle to perforate the pulmonary valve and then inflated it using a balloon. This kept the valve open for five weeks, ensuring a proper flow of blood through the heart. When the valve closed again, the child had to be delivered, but the extra time in the womb proved to be crucial.

Jamie Maguire, now 18 months old, is healthy and has good blood circulation and a heart that functions normally.

Small target

Lead researcher Dr Helena Gardiner, of the Centre for Fetal Care, said: "For the first time in the UK we have successfully performed balloon dilatation, opening pulmonary valves, on unborn children.

"When these operations are performed, the heart is about the size of a large grape so it's a very delicate and difficult procedure.

"Survival of the babies was our main goal but we were also able to study the reduction in pressure on one side of the heart as we monitored the changing dynamics of blood flow using ultrasound.

"Furthermore, the pregnancy was able to proceed to near *full term*, preventing the complications which can arise from premature delivery.

"With more experience, better equipment and a growing understanding of the foetus, this technique could be developed to help other unborn babies in danger of heart failure."

One hundred babies are born every week in the UK with some form of heart condition. Of these, about 3% will be born with problems caused by a faulty pulmonary valve. Not all of these babies will be able to undergo the procedure.

The research is published in The Lancet medical journal.

Text 5. UK heart failure toll rises

High levels of homocysteine are linked to heart disease

The number of people with heart failure will rise to 1.5 million in the UK alone by the year 2015, according to forecasts. The trend is being driven by a rapidly ageing population, says independent market analyst, Datamonitor.

The existing treatment also means more patients survive heart attacks but go on to develop heart failure. There are already more than 800,000 heart failure sufferers in the UK, costing the NHS more than 625mln pounds a year.

Datamonitor warns this figure will rise dramatically as more people *succumb to the disease*.

Treatment delays

Christine Hollidge, cardiovascular analyst at Datamonitor, said that treatment of heart failure itself had also improved dramatically. Diagnosis was often delayed, however, and recommended treatments remained widely under-used.

"The Department of Health is tackling this growing problem in its National Service Framework for Coronary Heart disease and has provided funding for further research into heart failure," she said.

"However, although there is significant room for improvement, advances will be limited until new therapies offering hope of a cure are developed."

Research funded by the British Heart Foundation (BHF) suggests heart disease costs the UK £7 billion a year. It includes non-medical costs, such as lost earnings to the economy, and is seven times more than was previously thought.

Lifestyle changes

Belinda Linden, head of medical information for the BHF, said the Datamonitor report confirmed that heart failure will become an increasing problem for the UK, as in other western countries.

"We have known for some time that heart failure is a growing problem," she told BBC News Online.

"As more people live with the consequences of heart disease and as the population ages, more people are likely to develop this *debilitating* and *chronic condition*."

The BHF says there will be a need for further investment in research and care to improve the outlook for people with the condition. Recently, it launched a network of 19 specialist nurses to help care for heart failure sufferers in the community and there are plans for further expansion of this network. But it believes many cases of heart failure could be avoided.

Ms Linden said: "By making lifestyle changes such as stopping smoking, getting 30 minutes of physical activity on five days a week and eating less saturated fat, people could reduce their risks of developing coronary heart disease which often leads to heart failure."

Writing task: using the vocabulary of these texts write a summary: Cardiovascular diseases as a "major killer" nowadays.

Dialogues and speech exercises. Cardiovascular Diseases.

Task. Read the following dialogues paying attention to the words in italics. Practice these dialogues with your partner. Then choose one to perform to the whole class.

Myocardial Infarction in the Young.

Case I.

- An 18-year old girl was first admitted to the hospital complaining of chest pain of two hours duration.
- Was the *pain localized*?
- No, the pain, severe and pressing originated in the *sternal region* and radiated over the entire chest.
- These *lesions* are very uncommon in the girls under the age of 20, aren't they?
- Certainly, they are quite uncommon.
- Was it the first attack of pain?
- No, the patient had had a similar attack approximately 2 months earlier and had been hospitalized elsewhere, and the electrocardiogram was normal then.
- Was her *past history* otherwise normal as well?
- Yes, quite. She had had neither serious illnesses nor operations before her admission here.
- Could you *get* her *family history*?
- Yes, family history disclosed that her father, a *diabetic*, suffered an attack of *coronary thrombosis* with a myocardial infarction at the age of 59; he made a *satisfactory recovery*. Her mother is living and well. Her elder sister suffered an attack of coronary thrombosis at the age of 19.
- What diagnosis did you suggest?
- The history and the character of pain suggested *angina pectoris* or *coronary insufficiency.*
- Well, I quite agree with you.

Words: sternal region - грудинный, относящийся к грудине, lesion - повреждение, поражение (органа, ткани), coronary thrombosis - тромбоз венечных сосудов, angina pectoris - стенокардия, грудная жаба.

Case II.

- My second young patient, a girl of 19, was admitted to our clinic because of *recurrent episodes of epigastric and substernal distress* (pain) associated with meals.
- Could you get any information about her past history?
- Except for an attack of *hepatitis* some two years earlier, she said she had no serious illness.
- I'm interested in her ECG. When did she undergo it?
- On the first hospital day. It showed changes diagnostic of an *acute myocardial infarction.*
- And what can you say about *X-ray findings*?
- Well, the picture wasn't *typical of* that disease process just as it has often happened.
- And the other *routine tests*?
- They were within normal limits.
- What *medical management* did you carry out?
- You see, as soon as she felt better she *was discharged*.
- And the last question, please. Could you get her *follow-up data*?

- Yes, she entered another hospital soon because of an episode (attack) of severe chest pain. A diagnosis of *coronary occlusion* was made. Soon complete occlusion of the *anterior descending branch* of the left coronary artery was demonstrated. However, she has remained relatively well with only *rare minor episodes of chest discomfort.* She is now 26 years old, married, and mother of healthy children.

Words: recurrent episodes of epigastric and substernal distress - рецидивирующие приступы болей в эпигастральной и загрудинной области, an acute myocardial infarction –острый инфаркт, coronary occlusion - закупорка венечной артерии, anterior descending branch передняя нисходящая ветвь, minor episodes of chest discomfort – небольшие болевые приступы за грудиной.

Unexplained Symptoms.

- Who was admitted to the clinic with chest pain yesterday?
- A 50-year-old woman.
- What did she say *on admission*?
- She said that for several years she had been suffering from chest pain and *hypertension* and since 1988 she had had *angina-like pain* with typical *radiation into* the inside of the left arm.
- When did the pain usually occur?
- It *occurred on exertion*.
- And when did the pain disappear?
- It usually disappeared at rest and *ingestion (taking) of vasodilator drugs*.
- What else did she complain of?
- She complained of *giddiness, episodic dispnoea* (difficulty of breathing) at rest, and *aching pain* in the left shoulder, arm and lower extremity.
- Those episodes are remarkable, I believe…
- Yes, of course. And they resulted in *numbness, tingling* and sensation of weakness on the left side of the body.
- Anything else worth noticing after admission?
- Nothing except for the *prolonged fit (attack) of chest pain* with all the known symptoms.
- What is your impression, please?
- Physical examination except for blood pressure was totally *unrevealing. Laboratory findings* were normal; results of a *chest X-ray film examination* and blood tests weren't *indicative of disease*.
- What was *the suggestive diagnosis*?
- Well, *clinical description* and *pathology report* were typical of *angina* and *myocardial infarction* with unexplained left-sided symptoms of *undetermined etiology*. But we noted that on one occasion, exertion produced numbness and weakness, but no chest pain. On another occasion, the chest pain was produced by the same physical exertion.
- Well, what conclusion have you arrived at?
- Thus, it became evident that the patient's *symptoms were not due to the heart disease*. Now she *is under observation* and I think it won't take long to make a correct diagnosis and *administer the right therapy.*

WORDS: hypertension; angina-like pain; ingestion of vasodilator drugs - прием сосудорасширяющих лекарств; giddiness -головокружение; episodic dispnoea - одышка; numbness - онемение ; tingling – покалывание.

Unexplained symptoms in Heart Trouble.

- The medical history of this 32-year-old man was very remarkable.
- What was his *chief complaint*?
- Massive *hemoptysis* (severe splitting of blood).

- Was it the first episode in his life?
- No, such episodes occurred to him before, but the patient *didn't seek medical attention*. Only in 1998 he was hospitalized because of the same episode.
- What diagnosis did they suggest then?
- A diagnosis of *severe bronchitis* was made at that time and he was *treated accordingly.*
- Was the diagnosis *confirmed*?
- No, it was *ruled out* when in 1999 "two to three mouthfuls" of bright-red blood were *coughed up* at almost monthly intervals.
- And nothing else was noted? No other signs and symptoms?
- Well, a slight increase in the amount of *dyspnoea* upon exertion had been noted since 1998, but there was no history of *paroxysmal nocturnal tachicardia*. And a year later massive quantities of bright-red blood were continually coughed up.
- What treatment was suggested *to control the hemoptysis*?
- No therapy was effective. Hemoptysis couldn't be controlled.
- *Couldn't the etiology be cleared up*?
- In a way perhaps. You know, though the *heart murmurs* were heard*, mitral stenosis* was suspected and that's why he *was referred here for evaluation*.
- What have you disclosed at the examination?
- This moderately fat patient was acutely ill. *Blood pressure* was 100 / 60 mm Hg. *Heart rate* was 100 *beats per minute* and regular, and the *respiratory rate* was 24 per minute. *Fine moist rales*, *coarse dry rales* in the bronchial tubes, and *expiratory wheezes* were heard over the entire lung fields.
- Couldn't you evaluate the *heart sound*?
- Oh no. It was very difficult because of the *noisy breast sounds and rales* and the thickness of his chest wall. No *definite diastolic murmur* was heard.
- What management has been recommended?
- *For the time being* no more than a close observation and more examination.

WORDS: hemoptysis – кровохарканье; dyspnoea - одышка, затрудненное дыхание; paroxysmal nocturnal tachicardia - пароксизмальная тахикардия по ночам; mitral stenosis - митральный стеноз; respiratory rate - частота дыхания; fine moist rales | ra:l| - мелкие влажные хрипы; coarse dry rales - сухие жесткие хрипы; expiratory wheezes – клокочущее выдыхание (выдыхательные хрипы); over the entire lung fields – по всей области легкого; noisy breast sounds and rales – загрудинные шумы звонкого характера и хрипы; definite diastolic murmur - определенный диастолический шум (не выслушивался); for the time being – пока.

Task: Pay attention to the following phrases which are characteristic of the conversations about the patients admitted to the hospital or for doctor-patient conversations:

on admission; to be admitted to a hospital / to be discharged
to complain of smth; chief complaint;
to get / obtain family history / past history; get her follow-up data
to be diagnostic of / typical of / indicative of some disease
the diagnosis – confirmed / ruled out
to be referred to the hospital for evaluation / to be under observation
to perform routine tests
laboratory findings – to be unrevealing
to disclose smth at the examination
to carry out / recommend medical management
to administer the right therapy
the pain – to occur on exertion / to disappear at rest
suggestive diagnosis

to be treated accordingly

Using these phrases and the vocabulary of the dialogues and texts make your own dialogues about CVS patients admitted to a hospital. Act them out.

Allergies. Ecological problems and health.

Pre-reading task. a) Discuss the following questions in pairs or in groups, then choose a speaker who will report back to the class.

1. What are the major ecological problems of our world?
2. What are the causes of these problems?
3. What are the ways to change the ecological situation in the world, to decrease the man's impact on nature and prevent the catastrophe?
4. Do you think ecological situation affects people's health? How?
5. What are the diseases connected with ecological problems?
6. How can we protect our health from hazards of chemicals?

b) Make a list of all the possible use of chemicals in our everyday life and another list of possible damage to your health due to the use of these chemicals in your notebooks. Read three texts and compare your lists with the information from the texts.

Text 1. Our Chemical world and our dilemma

Per person, we make and/or use more than 1,500 pounds of chemical products a year. They help feed, clothe, transport and house us.

Chemicals are the basis of our way of life - and health - today. There are about 15,000 chemicals made and used in high volume in the United States. (One of our center directors has figured that when we roast coffee for our morning jump-start, we end up with more than 1,000 chemicals right there in our cup!) And there are many natural products - herbal products, for example - that have become widely marketed and used without testing.

Synthetic chemicals, used on our farms, not only help feed us cheaply and well, they help feed much of the rest of the world as well. Chemical fibers clothe us. Chemicals cure us. They form key parts of our cars and our phones and computers, many building materials, rugs and other furnishings - you name it. Little wonder that U.S. production of these synthetic chemicals has climbed, almost without pause, from 10 million pounds in 1918 to well over 300 billion pounds in recent years.

Just as fire can burn us as well as warm us, some chemicals, natural as well as man-made, can cause diseases. Most of us are familiar, at least in a general way, with the evidence that tobacco smoking is a major cause of lung cancer and other diseases. Similar data in test animals as well as population studies showed that *asbestos* causes *mesothelioma* (an unusual tumor of the linings of the chest and abdominal cavity) and lung cancer and increases in gastrointestinal cancer. Another condition caused by asbestos is a chronic fibrous disease of the lung aptly called *asbestosis*.

Scientists also discovered that a number of chemicals, including the *pesticides,* kepone and dibromochloropropane, were causing workers to become sterile.

Some chemicals also can cause nerve damage. This resulted, in the case of kepone, in workers at a plant suffering nervous tremors, twitching and flickering eyes. That's history today. The State of Virginia ordered the last U.S. production to be terminated in 1975. In other cases, when we've learned of problems, businesses, labor unions and federal government regulators have stepped in to *remove or restrict the hazard*. Of course, we need to continue testing novel new chemicals and some old chemicals as well.

A major question today is how quickly can our testing discover problems? Can we predict - before anybody's hurt - whether a chemical will have a harmful health effect? Basically, there have been two ways to determine the causes of cancer and other diseases suspected of being caused by chemicals. One is by studying groups of people - like the classic studies comparing the illnesses of cigarette smokers with the experience of non-smokers. The other way is by studying laboratory animals. Both methods have strengths and weaknesses.

National Institute of Environmental Health

Text 2. What is an allergy?

Allergy is an *adverse immune reaction to* a protein or *allergen* in our environment that is normally harmless to the *non-allergic* individual.

This reaction is controlled by the IgE antibody, which *triggers* histamine release from mast cells in our skin, lungs, nose or intestine causing a cascade of *inflammation*.
It can manifest itself as *itching* of the skin, tissue *swelling* and *wheezing* or even progress to full-blown *anaphylaxis* and death.

A process of *sensitisation* must first take place and only after subsequent re-exposure will an *allergic reaction* occur.

Common allergic diseases
Summer Hayfever and Perennial Allergic Rhinitis
Asthma
Eczema, Contact dermatitis and Urticaria*.
Allergic Conjunctivitis
Allergy to Medication, Insect stings and Latex.
Food Allergy and Additive Intolerance.

Common Allergens
House dust mites (клещ)
Grass and Tree Pollens (пыльца)
Pet skin flakes or Dander / Dandruff (Cat, Dog, Horse, Hamster)
Fungal or Mould spores
Food (Milk, Egg, Wheat, Soya, Seafood, Fruit and Nuts)
Wasp and Bee Stings
Medication and Latex
Nickel, Rubber, Preservatives and Chemical Resins.
* urticaria [ˌəːti ‘keəriə] крапивница, крапивная лихорадка

Text 3. Air Pollution and Allergies: A Connection?

Does the "air we breathe" have an impact on the rising incidence of allergies and asthma? Hay fever was rare in Japan before World War II. However, pollen allergy is now common and mostly affects those living in Japanese cities and near highways. Allergic disease is also more common in highly developed countries in North America and Europe and less common in Third World countries. This suggests that there must be something about modern, urban life that promotes allergy. Let us examine the *impact of air pollution*.

By far the most important *indoor pollutant* is tobacco smoke, which is strongly associated with allergic sensitization, asthma, and other respiratory illnesses. *Exposure to smoke* results in the body's enhanced ability to produce IgE (the allergy antibody) that attaches to allergens (e.g. pollen, dust mites and dander). The IgE response is *a key trigger of* allergic reactions. Parental smoking increases the risk of their children having many respiratory illnesses, including bronchitis, chronic cough, and asthma. Smoking during pregnancy and breastfeeding results in a higher risk for the children to develop allergic eczema (*atopic dermatitis*). The rate of asthma in an infant of a smoking mother is double as compared to that of a non-smoking mother. This is

very important, since in North America, 25% of mothers smoke during pregnancy and 40% have a smoker in the home.

The increased rates of allergy and asthma in city environments and in those living close to highways have drawn attention to the role of outdoor pollution. Common air pollutants, such as *ozone, sulfur dioxide*, and *nitrogen dioxide* probably act more as *irritants* than as promoters of sensitization. These pollutants have been shown *to be hazardous to* adults and children with asthma. Recent studies suggest that prematurely born children *are more sensitive* to the respiratory effects of outdoor pollution. There may also be an association with diesel *exhaust* particles and the worldwide increase in respiratory allergies. Diesel exhaust has been shown to enhance the ability to make the allergy antibody, IgE, in response to exposure to allergens.

What is the bottom line? Tobacco smoke is by far the worst and most important air pollutant and it clearly promotes both allergy and asthma. Diesel *fumes* are likely to promote allergy, whereas other outdoor air pollutants act more as irritants that can *aggravate* allergies and asthma, rather than as true promoters of allergy or asthma.

Task. Look at the words in italics in the texts. Practice their pronunciation and note their usage in the sentences. Make sentences of your own with some of them

Additional texts (for reading and translation).

Text 1. Funds for Phones

Americans will retire about 100 million cell phones this year when they switch to new models or new carriers, according to INFORM, a nonprofit environmental research group. Many go into the trash, ending up *in landfills*, and still more are tossed into closets and drawers, where they await the same ultimate destination. As University of Florida researchers concluded in the July 2004 report RCRA Toxicity Characterization of Computer CPUs and Other Discarded Electronic Devices, cell phones often release enough lead under test conditions to be classified as *hazardous waste* under federal law. But while this growing mountain of old phones is drawing the attention of people who are worried about its *potential impact on the environment*, it has also been discovered by people who see it as a commodity that still retains market value.

In recent years, companies have emerged that buy old cell phones from individuals or groups that collect them on fundraising drives. These companies then sell the phones to foreign wireless carriers, who refurbish and resell them, or recyclers, who extract metals such as gold, silver, and copper. One company, RMS Communications Group, is currently taking in about 80,000 phones per month, according to its marketing and communications manager, Lynda Gorsuch. Like many such companies, RMS emphasizes charity tie-ins, offering people the opportunity to make a "virtual contribution" of the dollar value of the phone they sent in to a variety of charities listed on the RMS websites. Another such firm is Collective Good, which offers a similar smorgasbord of charities to which people can contribute the value of their old phones.

Meanwhile, youth organizations have found that cell phone collection drives offer unparalleled fundraising opportunities. On Earth Day 2004, a group of Boy Scouts in West Jordan, Utah, collected cell phones that they sold to RMS. RMS paid the Scouts from a set price list ranging from $3 to $100 per phone. The public response was so overwhelming that the Scouts are continuing the program and expect to make $6,000 from it this year, says David Bresnahan, an adult advisor who set up the project.

"We're trying to promote environmental protection, which is a great lesson for the kids," Bresnahan says, "and we're putting the money into a fund that's used to help kids who can't afford to go to camp or can't afford a backpack."

A 2003 INFORM report, *Calling All Cell Phones*, analyzed various U.S. cell phone collection and recycling programs and concluded that, while they are providing a "critically important" service, they are not nearly enough. INFORM senior researcher Bette Fishbein says industry

programs will absorb about 1% of this year's discarded phones, and independent programs such as RMS and Collective Good will absorb a bit more. But the total amount of phones being taken in is still well under 5% of the 100 million that will be discarded, she says.

"It's a step in the right direction," Fishbein concludes. "But if you're going to address the issue of toxics entering our environment through disposal facilities, you've got to take back a lot more."

Text 2. How Allergic Reactions Work

An allergic reaction involves two features of the human immune response. One is the production of immunoglobulin E (IgE), a type of protein called an antibody that circulates through the blood. The other is the mast cell, a specific cell that occurs in all body tissues but is especially common in areas of the body that are typical sites of allergic reactions, including the nose and throat, lungs, skin, and gastrointestinal tract.

The ability of a given individual to form IgE against something as benign as food is an inherited *predisposition.* Generally, such people come from families in which allergies are common—not necessarily food allergies but perhaps hay fever, asthma, or hives. Someone with two allergic parents is more likely to develop food allergies than someone with one allergic parent.

Before an allergic reaction can occur, a person who *is predisposed to* form IgE to foods first has *to be exposed to* the food. As this food is digested, it triggers certain cells to produce specific IgE in large amounts. The IgE is then released and attaches to the surface of mast cells. The next time the person eats that food, it interacts with specific IgE on the surface of the mast cells and triggers the cells to release chemicals such as histamine. Depending upon the tissue in which they are released, these chemicals will cause a person to have various symptoms of food allergy. If the mast cells release chemicals in the ears, nose, and throat, a person may feel itching in the mouth and may have trouble breathing or swallowing. If the affected mast cells are in the gastrointestinal tract, the person may have abdominal pain or diarrhea. The chemicals released by skin mast cells, in contrast, can prompt hives.

Food allergens (the food fragments responsible for an allergic reaction) are proteins within the food that usually are not broken down by the heat of cooking or by stomach acids or enzymes that digest food. As a result, they survive to cross the gastrointestinal lining, enter the bloodstream, and go to target organs, causing allergic reactions throughout the body.

The complex process of digestion affects the timing and the location of a reaction. If people are allergic to a particular food, for example, they may first experience itching in the mouth as they start to eat the food. After the food is digested in the stomach, abdominal symptoms such as vomiting, diarrhea, or pain may start. When the food allergens enter and travel through the bloodstream, they can cause a drop in blood pressure. As the allergens reach the skin, they can induce hives or eczema, or when they reach the lungs, they may cause asthma. All of this takes place within a few minutes to an hour.

Common Food Allergies

In adults, the most common foods to cause allergic reactions include: shellfish such as shrimp, crayfish, lobster, and crab; peanuts, a legume that is one of the chief foods to cause severe anaphylaxis, a sudden drop in blood pressure that can be fatal if not treated quickly; tree nuts such as walnuts; fish; and eggs.

In children, the pattern is somewhat different. The most common food allergens that cause problems in children are eggs, milk, and peanuts. Adults usually do not lose their allergies, but children can sometimes *outgrow* them. Children are more likely to outgrow allergies to milk or soy than allergies to peanuts, fish, or shrimp.

The foods that adults or children react to are those foods they eat often. In Japan, for example, rice allergy is more frequent. In Scandinavia, codfish allergy is more common.

Cross Reactivity

If someone has a life-threatening reaction to a certain food, the doctor will counsel the patient to avoid similar foods that might trigger this reaction. For example, if someone has a history of allergy to shrimp, testing will usually show that the person is not only allergic to shrimp but also to crab, lobster, and crayfish as well. This is called cross-reactivity.

Another interesting example of cross-reactivity occurs in people who are highly sensitive to ragweed. During ragweed pollination season, these people sometimes find that when they try to eat melons, particularly cantaloupe, they have itching in their mouth and they simply cannot eat the melon. Similarly, people who have severe birch pollen allergy also may react to the peel of apples. This is called the "oral allergy syndrome."

Part 3. TRANSPLANTATIONS. NEW TECHNOLOGIES IN MEDICINE.

Text 1.The Transplant Team.

Pre-reading task. Consider the following organs of the body: heart, lung, kidney, cornea and liver. Which one do you think can be most successfully transplanted and which one is the least successfully transplanted? Arrange all five of them from the most to the least successful. Then read the text and compare your list with the information given in it.

Transplantation is the transfer of living cells (such as blood cells), tissues (such as skin), or whole organs (such as kidneys) from one person to another. The person who gives the tissue or organ is called the *donor*, and the person who receives it is called the *recipient.* The transplanted organ is called a *graft*. The surgical techniques needed for most organ transplants are fairly simple. The difficult part of transplantation is the recipient's *immune response* to the foreign (donor) tissue. A transplant of tissue from one part of the person's body to a different part of his own body (an *autotransplant*) will not produce an immune response. Surgeons have been performing successful autotransplants of bone, tendons and skin for hundreds of years. A transplant of an organ between identical twins will also not produce an immune response, because the two people are genetically (and immunologically) identical. The recipient's immune system therefore recognizes the donor organ as "self".

Usually, however, the donor and the recipient are not identical twins. The transplant is between genetically different people (an *allotransplant*). The recipient's immune system recognizes the donor organ as "non-self", and *produces an immune response* against it. The recipient makes antibodies against the cells of the new organ. His lymphocytes and killer cells become active and try to destroy the donor cells. The donor organ becomes hot and inflamed, and it stops working. This process is called *graft rejection*. The success of allotransplant depends on preventing graft rejection.

The most successful organ transplant is the *cornea* – the membrane at the front of the eye. Even after 5 years, more than 80 percent of cornea grafts are still working well. This is because the cornea has no blood supply, and it therefore has no contact with the cells of the immune system (which travel in the blood). The cornea does not need a blood supply because it gets oxygen directly from the outside air. The cornea is therefore an immunologically protected site. It is very rare for the recipient to reject a cornea graft.

Kidney transplants are more difficult than cornea transplants, both surgically and immunologically. The first successful kidney transplant was performed in 1961. At first, the survival of transplanted kidneys was not good – only about 40% of them were still functioning after one year. Almost all of the failures were due to graft rejection. Even in the 1960s, kidney transplants between identical twins had a 90% survival after 5 years. Today, the survival of kidney allotransplants is about 90%after one year and 65% after ten years. The improvement in survival is due to the improvement of *immunological techniques*.

There are two immunological techniques which reduce the risk of graft rejection – *immune suppression* and *tissue matching*. Immune suppression is treatment with drugs, such as

cyclosporin and prednisone, which reduce the immune response. Recipients of all organ transplants (except corneas) must take immunosuppressant drugs. Cyclosporin, which is a very powerful immunosuppressant, has greatly improved survival after organ transplants (particularly heart transplants) in the last 15 years. The patient takes a low dose of cyclosporin for several months after the transplant. He is much less likely to reject the graft. If graft rejection occurs, it is usually mild. The doctors can usually stop the rejection with other immunosuppressant drugs. Because of cyclosporin, patients with heart transplants now often survive several episodes of "attempted rejection".

Tissue matching is finding a donor organ which is immunologically similar to the recipient's tissues. In graft rejection, certain molecules on the surface of the graft stimulate the recipient's immune system. These molecules are called *major histocompatibility complex* (*MHC*) antigens. There are hundreds of different MHC antigens. All the cells in a person's body have the same MHC antigen pattern; another person's cells will have a different pattern. Each person's MHC antigen pattern is almost as unique as his fingerprints. It is the MHC antigens which give the message "self" or "non-self" to the cells of the immune system.

When a patient needs a kidney transplant, the doctor takes a sample of his blood and finds the pattern of MHC antigens on his cells. The doctor must then find a kidney donor with a similar pattern. If the donor and the recipient have the same MHC antigen pattern, we say they are MHC identical. It is very rare (and very lucky!) to find a donor who is *MHC identical*, because there are so many patterns of MHC antigens. But it is usually possible to find an approximate match - a person who is *MHC compatible*. Sometimes a close relative of the patient is MHC compatible. Everyone has two kidneys, so if the relative is healthy he can donate one of his kidneys to the patient. His other kidney will grow larger to compensate for the one he has lost. In some countries, people who are not related to the patient donate one of their kidneys. They are usually poor people who do it for money. However, many doctors think that it is unethical to buy and sell the organs of poor people. The sale of kidneys from living donors is illegal in most countries. Most kidney grafts come from donors who have died – perhaps from severe brain damage after a road accident. The kidney donor is often on a life support machine for several days before he dies. During this time, the doctors can find two recipients (one for each kidney) who are MHC compatible with the donor.

When a person dies, his body legally belongs to his closest relatives. The doctor must ask for the relatives' permission to take the donor's kidneys. In Britain, about 20% of relatives refuse permission – either for religious reasons or because they don't like the idea of transplantation. However, most relatives give permission. Donating the organs of a dead person sometimes makes the relatives cope with the death more easily. Many people now carry a "donor card" which says that if they die in an accident the doctors may give their kidneys to another patient. But even when a person has carried a donor card, his relatives must still give their permission before the doctors can remove any organs from the body.

Until the doctors find a suitable donor, the patient must use an artificial kidney. This is usually a *hemodialysis* machine, which filters blood to remove waste products. The patient must have hemodialysis three times a week until he receives a transplant. If necessary, he can wait months or years. This is one reason why kidney transplants are more successful than heart or liver transplants. Although research doctors have made artificial hearts and artificial livers, these organs are much less effective than the real organs. Unlike hemodialysis, they cannot *sustain the patient* indefinitely while he waits for a donor. The recipient of heart and liver transplants are therefore often very sick when they receive the transplant. In addition heart and liver transplants are technically more difficult than kidney transplants.

Despite all these difficulties, the success of heart and liver transplants is increasing. One of the most exciting branches of medicine today is the transplanting of these organs into tiny babies. Babies are sometimes born with severe abnormalities of heart and liver. It is often impossible to correct these abnormalities with surgery. The baby's only hope is a completely new organ. He will only survive if doctors find a MHC compatible donor within a few days of his birth. The

surgeon must operate immediately on a baby who is very small and very sick. It's not surprising that the success of organ transplants into newborn babies is not as good as of transplants into adults.

Organ transplants are now a routine part of medical practice. The transplant surgeon often receives most of the credit for a successful transplant, but a whole team of doctors and nurses is usually involved. As well as the surgeon, the transplant team includes a *clinical immunologist*, a physician (who specializes in kidney, heart or liver failure), and the *intensive care doctors* (who maintain the donor on a life support machine in the days before the transplant). In addition, a specialist nurse or administrator (the *transplant coordinator*) helps with the complex administration of the transplant procedure. The transplant coordinator keeps a register of the MHC antigen pattern of all patients who are waiting for organ transplants; he reminds intensive care doctors to consider their dying patients for organ donations; and he arranges transport of the recipient to another hospital if a suitable donor is found there.

Comprehension Check.

1. Find the explanation of the following words and word combinations: *transplantation; donor; recipient; graft; immune response; autotransplant; allotransplant; graft rejection; cornea; immune suppression; tissue matching; MHC identical; MHC compatible; hemodialysis machine; transplant coordinator*.
2. Decide whether the following statements are true or false.
    1) There is no immune response when the tissue is transplanted from one part of the person's body to another part of his body.
    2) Allotransplants of bone, tendons and skin have been done for about 100 years.
    3) The surgery involved in most transplants is difficult.
    4) Graft rejection is the most important factor in the success of allotransplant.
    5) Cornea grafts are usually successful because there is a little contact with the cells of immune system.
    6) Kidney transplants have become more successful since the 1960's because of improvements in surgery.
    7) Immunosuppressant drugs are required in all organ transplants.
    8) The MHC antigen pattern is always different from person to person.
    9) It's sometimes possible to find someone who is MHC compatible in the patient's family.
    10) The sale of kidney from living donors is illegal in all the countries.
    11) Most British families agree with the idea of using the kidneys of their dead relatives.
    12) Hemodialysis cannot sustain the patient indefinitely.
    13) The surgery involved in kidney transplants is as difficult as in heart and liver transplants.
    14) Heart and liver transplants are more successful in adults than in small babies.
    15) Organ transplants always involve a number of different specialists.

3. Answer the following questions.
    1) Which is the most successful organ transplant? Why?
    2) Why doesn't cornea need a blood supply?
    3) When was the first successful kidney transplant performed?
    4) What is the survival rate of kidney transplants? Has there been any improvement in survival?
    5) What are the two immunological techniques which reduce the risk of graft rejection?
    6) What do you know about immune suppression and the drugs reducing immune response? How is it performed?
    7) What is tissue matching?
    8) What is the procedure of finding a person who is MHC identical or MHC compatible?
    9) Who can be an organ donor?
    10) Why is the sale of kidneys from living donors illegal in most countries?
    11) Where do most kidney grafts come from?

12) What must the doctor get before removing the organ from the body?
13) What is a “donor card”?
14) How are the patients waiting for a suitable donor treated? How often must they have hemodialysis? How long can they wait?
15) Why are artificial hearts and livers much less effective than artificial kidneys? What is the other reason for heart and liver transplant failures?
16) Who are involved in the operation of organ transplanting? What is a “transplant team”?

New technologies in medicine.

Introduction

The visualization of human anatomy for diagnostic, therapeutic, and educational purposes has been a challenge for scientists and artists for a long time. As documented by the famous drawings of Leonardo da Vinci, the educational content has been of high standard for centuries.

In vivo medical imaging, however, could not be introduced before 1895 when Wilhelm Conrad Röntgen discovered the X-rays. With the early medical imaging techniques which are still in use today, the three-dimensional reality of the human body is visualized as superimposed shadows in two dimensions.

With the advent of modern computers in the early 1970s, new tomographic imaging modalities like *computed tomography (CT*), *magnetic resonance imaging (MRI*), and *positron emission tomography (PET)* could be developed which *deliver cross-sectional images* of a patient's anatomy and physiology. These images show different organs free from overlays with unprecedented precision. Even the three-dimensional (3D) structure of organs can be recorded if a sequence of parallel cross-sections is taken.

However, for numerous clinical tasks like surgical planning, it is necessary to understand complex and often malformed three-dimensional structures. For these cases, it is certainly desirable to present the human body as a surgeon or anatomist would see it. The aim of volume visualization (also known as 3D imaging) in medicine is to create precise and realistic views of objects from medical volume data. This includes the image-based creation of models which may be investigated and manipulated at the computer screen.

Text 2. Computers In Hospital

Pre-reading task: Look through the text paying attention to the italicized words and word combinations. Try to explain in English their meaning.

The first regular use of written records of patient’s vital signs, drug doses, and procedures performed, seems to have been at the Massachusetts Hospital in about 1894.

Now, over one hundred years later, there are systems available *to automate data capture* and if desired, *transfer it* to all areas *throughout the hospital*.

Extensive clinical workloads, combined with *time and cost constraints*, also emphasise the importance of accurate documentation, particularly in the *critical care areas*.

By *facilitating the capture, organization, and presentation of* large volumes of *information* gathered from a variety of sites around the hospital, networked computers enable this data to be utilised in many different ways, including assisting and strengthening the decision making process, thereby contributing to an improvement in patient care.

The *networking of computers* and *subsequent data transfer throughout the hospital* has *a vast array of applications*. These can range from the standard clinical applications, whereby all information is automatically acquired from all the appropriate and necessary sources, such as vital signs, with subsequent computer generated documentation, to medical information transfer applications, *allowing for the sending and retrieval of data and patient records from other hospital databases*.

The use of information systems, automated record keeping and networked data transfer systems, is of great benefit to the Critical Care areas. Whilst networking has been commonplace in the ICU for many years, its application in the OR is only relatively recent.

This *access can then be initiated from any area of the hospital connected to the network*. For example, if the *anaesthetist* is in one OR doing a case, he/she can then visualize patients in any of the other ORs. They can also access the data of the previous patient in the PACU, or an upcoming patient from the ICU or ER, all without leaving the OR during the attendant procedure. This is of great benefit if the anaesthetist is overseeing trainee staff in a number of the rooms, or in those countries where an anaesthetist is responsible for running a number of ORs at any given time, without the barrier of distance, the clinician can then save valuable time in responding to urgent situations, should they arise, since immediate access to integrated data is an increasingly essential tool in critical care decision making.

This allows the clinician *to keep track of a patient's progress throughout the whole preoperative area.*

All of this is made possible because the networked devices allow for completely integrated patient information, data transfer and a comprehensive picture of the patient's condition anywhere in the hospital.

Access to patient data via networks can of course be taken even further via the use of Automated Clinical Information Management Systems.

The critical nature of the operating room environment makes it imperative, that an effective system exists for the visualization of patient data wherever clinicians may be - the OR, the PACU, the ICU or the post surgical ward.

Using the words and phrases from the text speak about the following topics:

1. The necessity of computer use in medicine (in hospitals)
2. The advantages of automated record keeping.
3. The main areas where computer data is of greatest benefit.

ICU – Intensive Care Unit
OR – Operative Room
ER – Emergency Care
PACU – Post Admittance Care Unit

Additional reading.

Task. Read the text given below, put down useful words and expressions. Then using the information of these texts and the texts above write a summary about new technologies in medicine. Cover the following points:

1. New methods of treatment and the development of new technologies in different fields:
   - Diagnostics
   - Treatment
   - Statistics and record keeping (Automated Clinical Information Management Systems)
2. Speak about some modern devices (in general) used in medical practice (Ultrasound for diagnosis and treatment; computer tomography, X-ray techniques; nuclear magnetic resonance tomography; radio-isotope blood tests to determine the contents of blood, the presence of natural components such as hormones, fats, enzymes, hydrocarbons, and abnormal components such as microbes and infections, etc.)

Text 3.Telemedicine Moves into the Home

In the not-too-distant future, when the visiting nurse comes to call on a homebound patient she'll use the phone.

The nurse will do the same kinds of exams she would have done in person: take the patient's blood pressure, listen to the heart and lungs, record body temperature, take other vital signs and give the patient a visual once-over. But the nurse could be dozens, hundreds or even thousands of miles away.

Telemedicine is on the horizon. A virtual visit can now be done with computerized devices and a standard phone line. With the blend of telephone and television, computer connections and the Internet, the idea of medicine at a distance has steadily matured. While much of the work remains experimental, the future vision has clarified enough for federal agencies to form the Joint Working Group on Telemedicine. Members include the Departments of Defense, Agriculture, Commerce, Health and Human Services, Justice, and Veterans Affairs; the Office of Management and Budget; the Appalachian Regional Commission; and the National Aeronautics and Space Administration.

The vanguard of telemedicine includes devices that provide communications among patients, physicians, and other health-care professionals. Such combinations include tele-radiology, in which images such as X-rays, sonograms, and CAT scans are sent digitally from one location to another; interactive videoconferencing, which allows several doctors to confer simultaneously with access to the same images; and tele-cardiology, in which electrocardiographic data is transmitted to experts for interpretation.

Telemedicine focuses on direct patient care, specifically linking the patient to the health-care provider, transmitting medical information from the patient to the nurse, doctor or other health-care professional. With a telemedicine device installed in the home, a nurse can complete an exam without the person ever having to go out. The medical information is transmitted from the testing devices directly to the health professional.

To start a telemedicine appointment, the patient calls the health professional on the phone and then switches on the machine. The videophone, connected by a standard telephone line, transmits readings from the stethoscope, thermometer and blood pressure cuff during the phone conversation. The station also lets the health professional monitor pulse rate and listen to sounds from the patient's bowels, heart and lungs.

Images and data are transmitted to the medical professional, then dated and stored. The units cannot be used if a patient or the patient's caregivers are physically unable to use it, if they don't have the ability to operate the device or if their language skills are not sufficient to communicate with medical personnel. Kodak expects the first units to be available through home health-care providers by the end of September.

Other telemedicine projects are ongoing across the country using approved medical technologies with electronic communications. Although it has been around for a while, telemedicine has been held back by "three big problems," says William Decker, senior policy advisor with the Public Policy Institute of the American Association of Retired Persons.

The first of these is third-party reimbursement.

The second big problem, he says, is "ensuring patient’s confidentiality and privacy," especially in applications involving satellite uplinks and downlinks. "Encryption," he notes, protects privacy, but it "drives up costs."

Decker says the third problem is that physicians are licensed by each state separately. A doctor licensed in California can't practice on a patient in Pennsylvania, even though telemedicine technology could easily allow it. Some work is being done on telemedicine licensing, but this is in its very early stages.

Because of this licensing limitation, many telemedicine projects are conducted within a single state. Many of the early studies have focused on rural health, where distances often make it difficult for patients to get to a healthcare professional. For example, Texas Tech University has several rural healthcare telemedicine projects, such as a project to connect clinics in several remote areas with each other and with experts at the university. Another project with a school health clinic links the school nurse, who is the only health-care provider in the small town of Hart, Texas, with specialists in Lubbock, saving patients and their families miles of driving.

The University of California at Davis sponsors a rural clinic program using videoconferencing and electronic transmission of sounds and images to enable patients to consult with specialists unavailable in their communities. The number of these consultations has increased by 300 percent since 1997. Practitioners in more than 17 medical specialties are available, including dermatology, endocrinology, nutrition, pain management, rheumatology, organ transplantation, and pediatrics.

Though the focus of telemedicine is usually local, sometimes it expands internationally. Alaska is participating in a working group to share information about telemedicine that includes Russia. Alaska and parts of Russia are similar in their remoteness and terrain. The Alaska Telemedicine Project, along with the University of Alaska and the State of Washington, plans to work with the international group to present a telemedicine model for giving rural healthcare providers access to e-mail, other Internet and computer-based information technologies, and medical imaging transmission.

"Telemedicine," Decker observes, "has real promise."

Text 4. Ultrasound.

I.Sooline Omnia: Leading Edge Ultrasound for Smaller Particles.

With its new Sonoline Omnia ultrasound scanner, Siemens brings the advanced ultrasound technology of its Sonoline Elegra systems to smaller clinics and large private practices. Powerful, yet compact – at 145 kilograms, it is the lightest and the smallest *imaging system* in its class – the Sonoline Omnia provides a *comprehensive package of clinical applications*, including brilliant image quality and *innovative technology*. This system offers the highly evolved technology of the Elegra, including Ensemble Tissue Harmonic Imaging, which greatly *improves image resolution* and SieScape Panoramic Imaging, which enables acquisitions up to a length of 60 centimitres. The Sonoline Omnia can be used for imaging *in all areas of medical inquiry*. For cardiology, a newly developed ultrasound probe is supported by new measuring and documentation software. Special ultrasound probes are also available for the acquisitions in paediatrics and paediatric cardiology. Smaller dimensions and light weight also make the Sonoline Omnia one of the most mobile systems in its class, *facilitating rapid and universal use* in clinical care environments from the spread-out general practice clinic to the confined *neonatal intensive care unit*.

Text 5. Photopic Ultrasound Makes it Easier for Clinicians to See and Diagnose Signs of Cancer and Stroke.

New ultrasound technology unveiled today helps clinicians more easily see and *diagnose common signs of cancer and stroke*. By *enhancing visual acuity*, Photopic ultrasound may also vastly *improve* the ergonomic conditions of *ultrasound scanning*. Developed in coordination with a global team of physicians, Siemens Photopic Ultrasound Imaging *emphasizes subtle discrepancies in tissue contrast*, making lesions and vascular obstructions more conspicuous. “Photopic Imaging is truly a pioneering step for ultrasound. It improves the *visibility of ultrasound signals*, making it easy to appreciate even minute differences in tissue and *improving diagnostic confidence*. It is simply a better, more ergonomic method for ultrasound exams. Results from a 220-case clinical study showed Photopic Ultrsound *aided diagnosis* in 44% of all ultrasound exams. The technology was *especially useful for* analyzing parenchymal organs and other *low-contrast, hard-to-image areas.* Study participants noted, Photopic Ultrasound also *improved analysis of vascular exams* in 77% of all cases. “”With standard grayscale ultrasound imaging, it can be very difficult to conclude whether subtle differences are artifacts or metastases. But when scanning the liver using Photopic Ultrasound, the dark pattern of the sub-segments appeared brighter. Within the dark areas, we could see focal lesions and metastases,” Using a sophisticated image-enhancement algorithm, Photopic Ultrasound instantly recognizes the acoustic “fingerprint”of a standard, grayscale ultrasound image, balances it and then

translates it into *colour-enriched image* optimized for photopic (or bright-light) viewing conditions. Photopic Ultrasound can be used with all *transducers,* in all scanning situations. It can also be combined with other advanced tissue optimizing technologies – such as Ensemble Tissue Harmonic Imaging and Ensemble Contrast Imaging – for even more dramatic gains in imaging quality. Physician, who studied the combination of Photopic Ultrasound and Ensemble THI said the combined technologies made diagnosis easier in 75 % of all cases.

Text 6. Configured Patient Monitor.

This monitor is a compact, portable bedside monitor providing a configured solution, with the flexibility to handle everyday monitoring tasks for adult, paediatric and neonatal patients in multiple hospital settings. This latest addition to the INFINITY Patient Monitoring System features a full selection of commonly used parameters in one integrated package: ECG, respiration, pulse, temperature, and invasive and non-invasive blood pressure. This monitor is a part of the System, which *facilitates* convenient access to patient information from across the entire healthcare enterprise. With the system's advanced networking capabilities, clinicians can *access remote bedside information* from any networked monitor, and also view patient information on any networked PC. The network also facilitates *complete and instant transfer of patient data* from one monitoring device to another, and establishes the link between the monitoring network, the HIS* and clinical information systems.

*HIS [Human Interface Standard] стандарт на пользовательский (мультимедийный) интерфейс

Text 7. Radiosurgery.

Radiosurgery is a new technique enabling a surgeon to perform a very precise work with very little tissue damage… This type of incision* produces a low level of bleeding and very little *edema* and *postoperative pain*. Small *dermatological* procedures can be performed rapidly and precisely without the need for anaesthesia. Due to microcoagulation produced by the pulsating radiofrequency current even small blood vessels are closed rapidly. As a result of these advantages, radiosurgery can *be applied to all branches of surgery*, ranging from major surgery to minor surgery in an office setting, from plastic surgery procedures to cervical coning. Biopsies can be performed safely and without danger of tissue alteration from heat.

The radiosurgical components have been created after years of careful experimentation and meet national and international safety regulations.

*incision надрезание, разрезание; разрез, надрез; насечка

Text 8. Diagnostic Radiology.

Diagnostic radiology continues *to hold the unchallenged top position* in specialist medical examinations of the *osseous system* or of the *internal organs* of the human body. Consequently, radiologists make high demands on the X-ray film as a medium for examinations. The osseous system as well as the soft tissue and the vessels are *to be imaged* in such a distinct manner that the medical diagnostician can clearly see and analyze all the relevant details. Primax X-ray films are among the best, both as far as their technical parameters and their economic efficiency criteria are concerned.

List of Abbreviations

AA – Alcoholics Anonymous
AIDS - Acquired Immunodeficiency Syndrome
CAD - coronary artery disease
CBC - complete blood counts
CT - computed tomography
CVS - cardiovascular system
DNA - deoxyribonucleic acid
DT - delirium tremens
ECG - electrocardiogram
EEG - electroencephalogram
ER – Emergency Care
GIFTS - Global Initiative for Traditional Systems of Health
HIV - human immunodeficiency virus
ICU – Intensive Care Unit
MHC - major histocompatibility complex
MRI - magnetic resonance imaging
NIAAA - National Institute on Alcohol Abuse and Alcoholism
NIH - U.S. National Institutes of Health
OAM - Office of Alternative Medicine
OR – Operative Room
PET - positron emission tomography
RNA - ribonucleic acid
TM - transcendental meditation
UNICEF - United Nations International Children's Emergency Fund
WBC - white blood cells
WHO - World Health Organization

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