Федеральное агентство по здравоохранению
и социальному развитию
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Health Care in the USA
(Здравоохранение в США)

учебное пособие по английскому языку
для студентов медицинских вузов

Благовещенск

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В учебном пособии представлены тексты для самостоятельного чтения по теме «Здравоохранение в США» В качестве источников использованы оригинальные, неадаптированные статьи из американских медицинских журналов и Интернет-ресурсов в объеме, оправданном поставленной целью. Упражнения к текстам статей направлены на проверку понимания учебного материала, активизацию и закрепление лексики, развитие навыков перевода. Учебное пособие предназначено для студентов медицинских вузов. Гриф УМО №17-29/563 от 28.12.2011 г./
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Учебное пособие предназначено для студентов 1-го и 2-го курсов лечебного и педиатрического факультетов медицинских вузов для самостоятельной работы во время изучения темы «Медицинское обслуживание в США» для снятия трудности при подготовке проектов по ключевым проблемам рассматриваемой темы.

В пособие включены статьи из американской прессы, Интернет-ресурсов, отражающие некоторые вопросы здравоохранения в США. Аутентичность текстов повышает интерес студентов к изучению языка и способствует лучшему усвоению материала.


К ряду текстов даны пояснения, аббreviатур, перевод некоторых слов и словосочетаний.

Материалы пособия подобраны в соответствии с программными требованиями.
МЕТОДИЧЕСКАЯ ЗАПИСКА

Предполагается, что пользующиеся пособием, владеют основами английского языка и нуждаются в цикле занятий, обеспечивающих практику чтения и говорения, а также в обучении свободному участию в беседе по медицинской проблематике.

Данное пособие представляет собой дополнительный этап работы студентов 1 и 2 курсов с материалами по теме «Медицинское обслуживание в США». Для подготовки проектов на этом этапе им предстоит ознакомиться с клише и лексикой, с содержанием текстов по теме, раскрывающих ряд аспектов функционирования системы здравоохранения США.

Для достижения поставленных учебных целей, которые включают ознакомление студентов со спецификой журнальных материалов профессионального характера, накопление словаря, необходимого для работы на этапе подготовки проектов, развитие навыков устной речи и перевода в рамках специальности, авторы пособия предполагают ряд упражнений к каждой части (Units) в зависимости от лингвистической насыщенности и трудности текста каждой части. Упражнения построены на лексико-грамматических трудностях, а также на трудностях, характерных для научного стиля прессы, текстов из Интернет-ресурсов, с которыми студенты встретятся в работе с журнальными материалами в будущей профессиональной практике.

В пособии представлены упражнения, как для проверки понимания текста, так и для развития устной коммуникации. Ряд упражнений предлагаются в виде тестовых заданий.

Следующий блок заданий – это группа упражнений-инструкций для подготовки проектов (устные проекты, блоги студентов-медиков в Интернете). Рекомендательный характер некоторых инструкций по подготовке проектов, например, “Some Possible Points to Clear up” предполагает развитие творческих и поисковых навыков студентов в работе с материалом части.
Итоговое задание по созданию блога в Интернете по теме «Нобелевские лауреаты США» направлено на активизацию коммуникативной составляющей.

Участникам Интернет-проекта необходимо включиться в беседу через Интернет, комментируя действия микрогрупп-участников в их блогах на английском языке (включение в блог текстовой и видео информации из YouTube о выбранном Нобелевском лауреате, видеоролика о микрогруппе и т.д.)

Работа над блогами предполагает проведение конкурса блогов по критериям, которые представлены на преподавательском блоге, что способствует закреплению у студентов-медиков качеств свойственных конкурентоспособной личности профессионала.

В целом подборка текстов данного пособия обеспечивает широкую тематическую основу беседы. Вопросно-ответные упражнения к текстам способствуют усвоению лексики с целью формирования относительно самостоятельных высказываний. Тестовые задания предполагают проверку правильности понимания ключевых моментов текстов. Работа с проектами и блогами направлена на привитие студентам-медикам навыков профессионально-ориентированного толерантного диалога на иностранном языке средствами Интернет-ресурсов.

Предлагаемый комплекс упражнений дает возможность преподавателю выбирать как упражнения, так и части (Units) при работе со студентами в зависимости от их уровня владения иностранным языком, их интересов при подготовке проектов.
Unit I. GENERAL DESCRIPTION OF HEALTH CARE IN THE USA

TASKS 1.1

1. READ AND TRANSLATE THE FOLLOWING WORDS AND WORD COMBINATIONS:

As much as possible, an aberration, a staggering price, a stunning number, to compete with longevity, insurance company, self-regulate, to write prescriptions, to put a crown in the mouth, generally speaking, colonoscopy, government-funded programs, junk, health-care providers, long-term solution.

2. READ AND WRITE OUT THE WORDS BELONGING TO THE THEME “HEALTH CARE”, TRANSLATE THEM INTO RUSSIAN

Cheap, exhibit, bad health, preventable death, service, economy, high-tech devices, control, truth, case, procedure, microscopic traces of blood, stool, expensive health care, LAZIK eye surgery, corruption, sick, bad diet, obesity, affect, genes, eyesight.

3. READ AND TRANSLATE THE TEXT “HEALTH CARE IN THE USA”

Health Care in the U.S.A.

Health care does not mean health. It is a bit disgusting to hear so many doctors, nurses, insurance agents and hospital managers claim that health care in the USA works just fine. The USA exhibits an aberration that is not found anywhere else on Earth: a staggering price for health care coupled with a stunning number of preventable deaths (i.e., bad health). There are countries that compete with the USA for number of preventable deaths, but usually they are very poor countries where health care is very
cheap. There are countries that compete with the USA in terms of cost, but usually they are northern European countries where death rates are low. The USA is unique in spending a fortune to get a bad service. (The USA spends about twice as much per person on health care as most European countries but European countries beat the USA on most health statistics, including higher longevity, lower cancer rates, fewer heart diseases, etc). Alas, it is not surprising: any system in which the doctor has a vested economic interest in your sickness is likely to focus on treatment over prevention. There is very little motivation in the USA to prevent a problem: thousands of doctors, nurses, hospitals and insurance companies would go out of business, and thousands more would see their income decimated, if diseases were prevented. This is a huge economic sector that needs a huge customer base, i.e. a large number of very sick people. The health care sector (a $2.3 trillion economy) needs people in bad health.

Health care is the one sector of the USA economy that is not subject to the market pressures that are supposed to self-regulate any market sector. First of all, there is a psychological factor: are you really willing to bargain for your health care as much as you do for, say, a new car? If the car you buy is not the best one, too bad. If the health care you get is not the best one, it might mean that you will be a cripple for the rest of your life. This is one factor in which price control does not follow automatically from competition. Secondly, the health care system constitutes a vast bureaucratic and financial apparatus that can do pretty much what it wants. The other economic sectors are under pressure to provide good products and good customer service lest they lose their customers. But a sick person can't really say “I’m so pissed that i will not get cured ever again”. And the vast apparatus of government subsidized (whatever they are called in your state) encourages health-care providers to charge as much as possible for as little as possible.

It is also a little pathetic to hear so many USA citizens defend the system that makes them and keeps them sick. A lady on a TV show said how proud she was of the doctor she sees “almost every week”. That doctor obviously never healed her. She is chronically sick and she doesn't even realize it. Another guest was praising the high-
tech devices of the hospital when in fact the USA still relies mostly on paper and pen. In 2009 there is virtually no human activity (not even a grandpa writing a letter or a housewife writing a shopping list) that still relies on paper and pen. However, USA physicians routinely write prescriptions, notes and reports using a pen (and mostly with terrible handwriting). The fundamental truth that has eluded the USA is that “health care” and “health” is not the same thing. A lot of health care does not translate into good health. In fact, it almost always backfires (try and take ten aspirins a day) even when the intentions are good. In the USA there have been several cases in which it was proven that the intentions were not even good: doctors and dentists recommended a product or a procedure because it would benefit them financially. Every foreigner's favorite example is the USA dentist that wants to put a crown in your mouth: millions of USA citizens have crowns that were totally unnecessary but that made them chronically dependent on dentists. Generally speaking, health-care providers always tend to provide the most expensive kind of treatment because it's the most lucrative, not necessarily because it is really needed. On the other hand, they tend to ignore cheap treatments (especially prevention) because there is no money in them. Another favorite joke among foreigners is the doctors that routinely recommend an MRI or a colonoscopy, which are very expensive tests, when in fact these are almost always unnecessary and a good physician (one who is really competent in “medicine” and not just in “medicines”) could have diagnosed the problem with much cheaper tests. The colonoscopy, for example, is a rather dangerous thing to do in the first place. In Europe citizens over 50 are routinely asked to self-test themselves with a free kit available in all pharmacies. Government labs test the kit for free and return a simple yes/no result based on whether microscopic traces of blood were found in the stools or not. If not, then there is no need for an expensive colonoscopy. These simple, effective and much safer procedures are often unknown in the USA because no health-care provider has any interest in telling the patients.

Worse: the sick person is often not the customer. The real customer is the insurance company. A health-care provider has to please the insurance company, not necessarily
the sick person. If a sick person dies in a hospital but the insurance company is happy, few people within the hospital will feel that something went wrong. On the other hand, if a sick person is successfully cured but the insurance company complains, there is certainly going to be a review of the procedure. When the sick person is indeed the customer, the story is completely different: any procedure that is not covered by insurance is likely to be priced very competitively and come with a high degree of quality control. Compare the prices and success rates of LASK eye surgery and of colonoscopies or MRIs. The former (usually not covered by insurance) has been getting cheaper and cheaper. The latter have been getting more and more expensive. Yet, even a casual observer realizes that eye surgery is a lot more difficult than a 15-minute colonoscopy.

The other big customer of the health care economy is the government. Government-funded programs have twisted the meaning of “health care” the same way that insurance-based health care has.

The problem is compounded by sheer corruption. The health-care lobby has bribed Congress to pass laws that make the whole field as uncompetitive as possible, and that discourage any attempt by outsiders to create an alternative system.

The health care system is dysfunctional because the incentives are to inflate costs and to encourage ever more treatment I hope it is clear to everybody that this cancer (hospitals, doctors, insurance companies) will never stop: it will gladly become 20% and then 30% and then 50% and, if it were physically possible, even 100% of the USA's GDP.

There is also a subtle alliance between the health-care providers and the food manufacturers. Health care would not be a $2.3 trillion business if the USA diet weren't so unhealthy. Food manufacturers make people sick so that health-care providers can make money out of those sick people. The market for prescription drugs and medical devices to cure heart diseases, cancers, diabetes and, quite simply, obesity was not affected at all by the recession. (See this New York Times article). These health problems are often caused by a bad diet. Instead the food industry spreads the myth that
they are caused by genes, and people go on eating junk and getting sicker and sicker (how many Asians, Europeans or Africans are obese? how many USA descendants of Asians, Europeans or Africans are obese? it doesn't take a genius in biogenetics to find out that it's the diet and not the genes that makes you twice bigger than your ancestors). The health-care industry cooperates with the food-manufacturing industry in deluding the public that their diseases are genetic. Your doctor would not get rich if s/he simply told you to stop eating junk and start hiking in the mountains. Your doctor gets immensely rich if s/he does not give you any advice about diet and exercise, and lets you get chronically sick. Then the doctor will explain with a smile that major surgery is needed to fix your problem. You may lose your eyesight or a limb. Your life will be ruined forever by the number of medicines and hospitalizations that your bad health will require. But the doctor and the hospital will get very rich. And thousands of nurses will have good jobs. And the stocks of pharmaceutical companies will skyrocket. This whole colossal economy relies on you living your entire life in bad health.

Bottom line: for as long as health care is a business (i.e., health-care providers are allowed to get rich out of people's sickness), it will be more profitable for the system to treat chronic diseases than to prevent them (and, unless you are really naive and gullible, even more profitable to make sure you remain chronically sick). If there is a solution to the mess, it is not an easy one. While we may not know what the solution is, we do know what the problem is: the health-care providers themselves. While it is certainly not a desirable long-term solution, nationalizing all of them might be a good short-term way to acknowledge where the problem lies. If they don't want to work for a government salary, they are welcome to leave the country and move somewhere else. They might be surprised to find out that their services are not welcome anywhere else.

NOTES TO THE TEXT:

• a bit disgusting – немного отвратительный
• insurance agents and hospital managers claim – страховые агенты и менеджеры больниц требуют

• a stunning number – ошеломляющее количество

• to get a bad service - получать плохое обслуживание

• vested economic interest – отмеченный экономический интерес

• health-care providers – работники здравоохранения

• MRI – magnetic resonance investigation – магнитно-резонансное исследование

4. ASK QUESTIONS USING THE FOLLOWING ANSWERS:

Model: Health care is one sector of the USA economy that is not a subject to the market pressures.

What is one sector of the USA economy that is not a subject to the market pressures?

1) The USA is unique in spending a fortune to get a bad service.
2) This is one factor in which price control does not follow automatically from competition.
3) The health care system is dysfunctional because the incentives are to inflate costs and to encourage even more treatment.
4) The other big customer of the health care economy is the government.
5) Government-funded programs have twisted the meaning of “health care” the same way that insurance-based health care has.
6) There is also a subtle alliance between the health-care providers and the food manufactures.

5. ANSWER THE FOLLOWING QUESTIONS USING THE WORDS GIVEN IN BRACKETS
1) How do you understand the statement “Health care does not mean health”?
2) What countries compete with the USA in terms of cost? (Northern European countries, poor countries).
3) In what spheres of health care do European countries beat the USA? (death rate, higher longevity, lower cancer rates).
4) What’s surprising in health care system in the USA?
5) Why was a lady on a TV show proud of her doctor? (to see her every week, to hospitalize her).
6) Why did doctors and dentists recommend a product or a procedure? (benefit, to loose money).
7) Is it possible for Russian health care system to face the same problems?

6. СОГЛАСИТЕСЬ ИЛИ НЕ СОГЛАСИТЕСЬ С УТВЕРЖДЕНИЯМИ:

1) The food industry spreads the myth that health problems are caused by genes.
2) There is very little motivation in the USA to prevent a problem.
3) Health care is a business in the USA.

7. ОТМЕТЬТЕ ПРАВДИВЫЕ УТВЕРЖДЕНИЯ:

1) Система здравоохранения в США тесно сотрудничает с пищевой промышленностью.
2) Врач заинтересован в профилактике заболеваний.
3) Врач получает прибыль, если говорит пациенту не есть фастфуд.
4) В североевропейских странах уровень смертности очень низкий.

8. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

Many Americans die because of bad treatment.
Task 1.2

1. Read the text “Nursing Home” and do the exercises below.

Nursing Homes

Program of All-Inclusive Care for the Elderly (PACE)

PACE is unique. It is an optional benefit under both Medicare and Medicaid that focuses entirely on older people, who are frail enough to meet their State's standards for nursing home care. It features comprehensive medical and social services that can be provided at an adult day health center, home, and/or inpatient facilities. For most patients, the comprehensive service package permits them to continue living at home while receiving services, rather than be institutionalized. A team of doctors, nurses and other health professionals assess participant needs, develop care plans, and deliver all services which are integrated into a complete health care plan. PACE is available only in States which have chosen to offer PACE under Medicaid.

Eligibility

Eligible individuals who wish to participate must voluntarily enroll. PACE enrollees also must:

• Be at least 55 years of age.
• Live in the PACE service area.
• Be screened by a team of doctors, nurses, and other health professionals as meeting that state's nursing facility level of care.
• At the time of enrollment, be able to safely live in a community setting.

Services

PACE offers and manages all of the medical, social and rehabilitative services their enrollees need to preserve or restore their independence, to remain in their homes and communities, and to maintain their quality of life. The PACE service package must include all Medicare and Medicaid services provided by that State. In addition, the PACE organization provides any service determined necessary by the interdisciplinary team. Minimum services that must be provided in the PACE center include primary care services, social services, restorative therapies, personal care and supportive services, nutritional counseling, recreational therapy, and meals. Services are available 24 hours a day, 7 days a week, and 365 days a year.

Generally, these services are provided in an adult day health center setting, but may also include in-home and other referral services that enrollees may need. This includes such services as medical specialists, laboratory and other diagnostic services, hospital and nursing home care.

An enrollee’s need is determined by PACE’S medical team of care providers. PACE teams include:

• Primary care physicians and nurses.
• Physical, occupational, and recreational therapists.
• Social workers.
• Personal care attendants.
• Dietitians. • Drivers.

The PACE team has frequent contact with their enrollees. This helps them to detect subtle changes in their enrollee's condition and they can react quickly to changing medical, functional, and psycho-social problems.

Payment
PACE receives a fixed monthly payment per enrollee from Medicare and Medicaid. The amounts are the same during the contract year, regardless of the services an enrollee may need.

Persons enrolled in PACE also may have to pay a monthly premium, depending on their eligibility for Medicare and Medicaid.

REMEMBER THE FOLLOWING WORDS:

- nursing home – частная лечебница
- inclusive – включающий в себя, содержащий
- to feature – отводить важнейшее место
- eligibility – приемлемость
- eligible – подходящий
- to enroll – записываться, вступать в члены
- to assess – определять, оценивать

2. MAKE UP QUESTIONS SO THAT THE FOLLOWING SENTENCES COULD BE ANSWERS

1) Program of All-Inclusive Care for the Elderly serves mainly older people who cannot meet their State’s standards for nursing home care.
2) Patients of this program may receive treatment and services at home.
3) Doctors determine patients’ needs and develop plans of treatment.
4) Participants of the program must be at least 55 years old, live in the PACE service area, be chosen by a team of doctors, nurses and other professionals as meeting that state’s nursing facility level of care.
5) The Program of All-Inclusive Care for the Elderly offers all the medical and rehabilitative services for participants who want to preserve and restore their health.
6) Minimal services that must be provided in the PACE center include primary care services, social services, restorative therapies, personal care and supportive services, nutritional advice.

7) These services may be provided at home.

8) The PACE team often contact with their participants that help them to determine changes in their condition and allows reacting quickly to changing medical, functional and psycho-social problems.

3. COMPLETE THE SENTENCES

1) Program of All-Inclusive care for the Elderly is … .
2) PACE is available only in … .
3) Eligible persons who want to participate must … .
4) The PACE service package must include … .
5) Services provided in the PACE include … .
6) PACE team include … .
7) The amounts of payment are … .
8) Work with the PACE participants helps the doctors to … .

4. EXPRESS YOUR AGREEMENT OR DISAGREEMENT WITH THE FOLLOWING STATEMENTS USING THE COVERSATIONAL FORMULAS:

Quite so, just so, exactly, that’s right, I am fully agree, sure, I don’t think so, just on the contrary, you are mistaken I’m afraid.

1) Program of All-Inclusive Care for the Elderly is unique.
2) Patients may receive treatment only in the hospital.
3) Any person may take part in this program.
4) Services available 24 hours.
5) Laboratory and other diagnostic services, hospital and nursing home care are included in the services.
6) Patients determine their needs themselves.
7) People enrolled in PACE may have to pay a monthly premium.

5. TRANSLATE SENTENCES FROM RUSSIAN INTO ENGLISH

1) Программа ухода за пожилыми включает современное медицинское обслуживание, как на дому, так и в стационаре.
2) Врачи и медицинские сестры разрабатывают план ухода за пациентами.
3) Программа предлагает все услуги, необходимые участникам для восстановления и сохранения здоровья, такие как восстановительная и поддерживающая терапия, рекомендации по питанию.
4) Службы работают 24 часа в сутки круглый год.
5) В программе работает много специалистов: врачи, социальные работники …

TASKS 1.3

1. READ THE TEXT

Garden City Hospital

1. Garden City Hospital (GCH) was founded in 1947 by six local physicians. Committed to providing the best care to patients possible, these physicians pooled their money and opened a small hospital in a rented facility at Ford Road. The initial name was Garden City Maternity Hospital even though it treated sick and injured persons too.

Due to expansion, more space was needed so it was decided that a new facility would be built. Groundbreaking occurred in 1959 on the current facility, which is located at 6245
Inkster Road in Garden City. The doors of Garden City Hospital opened in August 1960 and have since grown to what is today, a state-of-the-art medical facility with 323 licensed beds.

2. GCH has a total of 365 physicians in 47 specialties: Addiction Medicine, Allergies/Immunology, Anesthesiology, Cardiac Electrophysiology, Cardiac/Thoracic Surgery, Cardiology, Critical Care, Dermatology, Electrodiagnostic Medicine, Emergency Medicine, Endocrinology, Family Practice/Primary Care, Gastroenterology, General Surgery, Hematology/Oncology, Hospice/Palliative Care, Infectious Diseases, Internal Medicine, Neonatology, Nephrology, Neurology, Neurosurgery, Obstetrics/Gynecology (OB/GYN), Oncology, Ophthalmology, Oral & Maxillofacial Surgery, Oro-Facial Plastic Surgery, Orthopedic Surgery, Otolaryngic Allergy, Otorhinolaryngology (Ear, Nose & Throat), Pain Management, Pathology, Pediatric Cardiology, Pediatric Neurology, Pediatrics, Physical & Rehabilitative Medicine, Plastic/Reconstructive Surgery, Podiatry, Psychiatry, Psychology, Pulmonary Medicine, Radiation Oncology, Radiology, Rheumatology, Sleep Medicine, Sports Medicine, Urology/Surgery, and Vascular Surgery.

3. Similar to other hospitals in Michigan, GCH is facing enormous challenges, including a disproportionate share of patients without insurance. Also, GCH is a teaching hospital offering medical education to about 90 individuals in an array of specialties. Garden City Hospital is doing its part in training the future physicians of America.

Most recently, GCH unveiled a 37,000 sq ft, $15 million Surgery Center. The Surgery Center was designed to enhance the patient and visitor experience. At the same time, six surgery suites and three procedure rooms house state-of-the-art surgical technology for physicians.
4. The Surgery Center features several other elements designed to ease the experience for both patients and visitors. They include

• Testing comes to the patient for their convenience. If a patient needs blood work on the day of surgery, the technician will come to them. EKGs and chest X-rays are done in a private area in the Surgery Center.

• Temperature-controlled warming units can be adjusted for individual patient comfort. Warm blankets are also provided if patients are chilled.

• When patients are admitted to Garden City Hospital following surgery, their loved ones receive a card with the patient’s name, hospital room number and telephone number for a seamless transition and family communication.

• Waiting areas are equipped with free WiFi, two public access computers with Internet access and a flat screen television.

• Small group seating areas will allow for family privacy and togetherness.

Garden City Hospital is currently working on a project to implement a new Electronic Medical Record (EMR) system in the hospital to improve the quality and safety of care for the hospitalized patients and also for Physician Offices.

2. ОТВЕТЬТЕ НА ВОПРОСЫ:

1) What specialties are the most necessary in Garden City Hospital?

2) What challenges is GCH facing?

3) What features of the Surgery Center ease the experience for patients? Which of them can you recommend for our clinics?

4) What is done for visitors in GCH?

5) Does this hospital differ much from Russian Hospitals?

3. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:
Garden City Hospital is a small government-financed hospital.

- в тексте нет информации
- истинным
- ложным

4. УКАЖИТЕ, КАКОЙ ЧАСТИ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИНФОРМАЦИЯ:

Garden City Hospital is facing the problem of uninsured patients.

- 1
- 2
- 3
- 4

5. ОТМЕТЬТЕ ПРАВДИВЫЕ УТВЕРЖДЕНИЯ:

1) В GCH работают специалисты таких направлений как: детская кардиология, неонатология, психиатрии, дерматологии.
2) GCH первоначально назывался роддомом.
3) В настоящее время в больнице работают над системой электронного ведения документации.
4) В хирургическом центре больницы все анализы, включая ЭКГ и рентген, делаются в палате пациента.

TASKS 1.4
1. READ THE PAIRS OF SENTENCES AND CHOOSE THE ONES CORRESPONDING TO THE TEXT “PATTERNS OF CHANGE”:

1) a) The USA countryside no longer faces the lack of physicians.
   b) Rural communities still suffer from shortage of sufficient physicians and adequate medical facilities.

2) a) Family physicians can diagnose and treat any kind of diseases.
   b) Any medical problem even a routine one needs consultation of a physician.

3) a) Public hospitals nowadays provide more efficient and cost-conscious management.
   b) A number of private hospitals is constantly increasing.

4) a) Public health care is free of charge and available to the whole population.
   b) Medical programs and government-funded health insurance are more expensive than private medical care.

5) a) Highly qualified medical health care is available to everyone in the USA.
   b) Difference in the way people live account for the health gap between rich and middle class and the poor.

2. MAKE UP 5 QUESTIONS TO THE TEXT

Patterns of Change

The health care system in the United States today is in a period of rapid change on many different fronts. One example is the distribution of medical services. By the mid-1980s, the United States, in a reversal of a long-standing pattern, no longer faced a shortage of physicians. There was, in fact, a developing surplus of medical doctors. But physicians often prefer to practice in urban areas or comfortable suburbs. As a result, many inner city areas and rural communities still lack sufficient physicians and adequate medical facilities.
As the number of medical specialties has grown in recent years, patients sometimes have found it frustrating to deal with a number of different physicians for differing ailments, rather than with the traditional family physician. Medical schools have responded by creating a new specialty—family medicine. Such family physicians can diagnose and treat many kinds of illnesses, though they also send patients to specialists when necessary. Not every medical problem requires a highly trained specialist, or even a physician. In some communities, physicians’ assistants, working with medical doctors, perform some routine medical procedures. Nurse midwives manage normal pregnancies and deliveries, calling upon obstetricians only if problems develop.

The Humana Corporation’s highly publicized artificial heart program highlights another change in American medical practice. Profit-making corporations are playing an increasingly large role in providing medical care, and chains of private, “for-profit” hospitals are growing. Private companies also compete for contracts to run public hospitals for a fee, promising more efficient and cost-conscious management.

Can profit-making corporations deliver more economical and higher quality medicine? Or do they simply draw patients with sufficient funds or health insurance away from non-profit and public hospitals, leaving these institutions to cope with the poorest and sickest patients?

Liberal social critics deplore the lack of government planning and central oversight inherent in a free market approach to health care. Conservative critics, on the other hand, feel that government-funded health insurance and medical programs are inefficient and more expensive than private medical care in the long run. Critics on both sides often agree, however, the medical profession has been given too much freedom in determining the cost of medical care.

While some groups might benefit from funds spent to improve medical care further, many people feel that differences in the way people live account for much of the health gap between rich and middle class and the poor. Is it possible to spend too much money saving a single life? Would spending less money on advanced medical treatments increase the amounts available for better nutrition, pollution controls, safety devices,
campaigns to increase exercise and cut back smoking, and other preventive measures? Should people be held responsible for habits and behaviors which make them sick?

Physicians, politicians, medical experts and ordinary citizens were debating these questions in the early 1990s. The answers are by no means clear-cut, but involve a number of trade-offs and compromises between equally desirable goals. In a nation in which more than 11 percent of the Gross National Product (the value of all goods and services) is spent on medical services of all kinds, Americans are in agreement on one central point: Quality, affordable health care must be available to everyone.

TASKS 1.5

1. READ THE TEXT “THE PHYSICIAN” AND FIND THE FACTS IN THE TEXT TO PROVE THE STATEMENTS GIVEN BELOW:

The Physician

A) Self-employed private physicians who charge a fee for each patient visit are the foundation of medical practice in the United States. Most physicians have a contractual relationship with one or more hospitals in the community. They send their patients to this hospital, which usually charges patients according to the number of days they stay and the facilities—operating room, tests, medicines—that they use. Some hospitals belong to a city, a state or, in the case of veteran's hospitals, a federal government agency. Others are operated by religious orders or other non-profit groups. Still others operate for profit.

B) Some medical doctors are on salary. Salaried physicians may work as hospital staff members, or residents, who often are still in training. They may teach in medical schools, be hired by corporations to care for their workers or work for the federal government's Public Health Service.
C) Physicians are among the best paid professionals in the United States. In the 1980s, it is not uncommon for medical doctors to earn incomes of more than $100,000 a year.

D) Specialists, particularly surgeons, might earn several times that amount. Physicians list many reasons why they deserve to be so well rewarded for their work. One reason is the long and expensive preparation required to become a physician in the United States. Most would-be physicians first attend college for four years, which can cost nearly $20,000 annually at one of the best private institutions. Prospective physicians then attend medical school for four years. Tuition alone can exceed $10,000 a year. By the time they have obtained their medical degrees, many young physicians are deeply in debt. They still face three to five years of residency in a hospital, the first year as an intern, an apprentice physician. The hours are long and the pay is relatively low.

E) Setting up a medical practice is expensive, too. Sometimes several physicians will decide to establish a group practice, so they can share the expense of maintaining an office and buying equipment. These physicians also take care of each other's patients in emergencies.

F) Physicians work long hours and must accept a great deal of responsibility. Many medical procedures, even quite routine ones, involve risk. It is understandable that physicians want to be well rewarded for making decisions which can mean the difference between life and death.

1) Physicians work in a close contact with hospitals.
2) Physicians are well-paid specialists.
3) To become a doctor requires much time and effort.
4) Setting up a medical practice is not an easy matter.
5) The work of a physician is very hard and challenging.
1) getting a profession of a doctor
2) wages
3) physicians and hospitals
4) responsibility
5) medical practice
6) salaried doctors and their activity

TASKS 1.6

1. READ AND TRANSLATE THE TEXT “MOST DOCTORS WANT PRIVATE-PUBLIC MIX: POLL”

Most U.S. Doctors Want Public-Private Mix: Poll

A combination of both public and private options is favored by U. S. Doctors in a reformed healthcare system, as per a recent survey. There is a possibility of the inclusion of a government-run insurance plan to compete with private insurers. It will be one of the most divisive parts of the reforms made under President Barack Obama's top domestic legislative priority plans.

A total of 62.9 percent physicians participating in the survey conducted by the New England Journal of Medicine (NEJM) chose public option against a 27.3 percent backing the private system whereas a 9 percent wanted a solely government owned health care coverage system.

The U. S. President has vowed to pass legislation by the end of this year that would cover America's 47 million uninsured citizens by making insurance obligatory and affordable for all.

He is facing a strong opposition from the republicans who are stating fears that a public option would lead to a federal takeover of health care.
This option is being considered by the Senate Finance Committee which has played a significant role in legislating the health reform plan.

Nearly 2,130 general physicians, specialists and surgeons were surveyed, by the NEJM, working in both private and public hospitals.

2. THE TEXT SPEAKS ABOUT:

1) combination of public and private healthcare systems
2) percentage of doctors backing the systems
3) position of the US President regarding combinations of the 2 systems
4) health care expenses
5) insurance plans

TASKS 1.7

1. READ THE TEXT “MEDICAL COSTS” AND FIND A KEY SENTENCE IN EACH PARA, GIVE A RESUME OF THE TEXT:

Medical Costs

Physicians’ fees are only one reason for rising health costs in the United States. Medical research has produced many tests to diagnose, or discover, patients' illnesses. Physicians usually feel obliged to order enough tests to rule out all likely causes of a patient's symptoms. A routine laboratory bill for blood tests can easily be more than $100.

Sophisticated new machines have been developed to enable physicians to scan body organs—even the brain—with a clarity never before possible. One technique involves the use of ultrasound—sound waves beyond the frequencies that human beings can hear—to produce images. Others use computers to capture and analyze images produced by X-rays or magnetic fields.
These machines often make unnecessary older diagnostic tests which are painful and sometimes dangerous. But the machines are extremely expensive: The price of a single machine can exceed one million dollars.

New technologies also mean new personnel. Physicians, nurses and orderlies can no longer staff a hospital alone. Hospitals now require a bewildering number of technical specialists to administer new tests and operate advanced, medical equipment.

Physicians and hospitals also must buy malpractice insurance to protect themselves should they be sued for negligence by patients who feel they have been mistreated or have received inadequate care. The rates that physicians were charged for this insurance rose very steeply in the 1970s and 80s as patients became more medically knowledgeable, and as juries sometimes awarded very large amounts of money to injured patients.

As a result, hospital costs and physicians’ fees rose steadily through the 1960s and ’70s. By 1986, the average cost of a stay in the hospital had climbed to more than $ 500 a day. Government agencies became convinced that it was necessary to limit rising medical costs. One approach is to require hospitals to prove that a need exists for new buildings and services. Hospitals also have faced pressure to run their operations more efficiently, and to decrease the duration of hospital stays for patients receiving routine treatment or minor surgery.

Clichés to be used:

1) The text is about…
2) It concerns the problems of …
3) As far as I understood…
4) It should be noted that…
5) Taking into account…
6) Discussing the problem of… one may stress…
7) Of a great importance
is the fact that…  факт, что…
8) In conclusion I’d like to say… В заключении я могу сказать, что…
9) To sum it up… Подводя итог…

1. CHOOSE THE IDEAS NOT VIEWED BY THE ARTICLE:

1) New equipment has been developed.
2) New equipment means new specialists to administer it.
3) Many hospitals suffer from the lack of highly qualified physicians.
4) Malpractice insurance must be bought by the hospitals.
5) Underprivileged people are to be treated at lower costs.
6) Hospital costs and physicians’ fees rise steadily.
7) Modern equipment and highly qualified specialists mean high standard of medical care.

TASKS 1.8

1. READ THE TEXT “PAYING THE BILLS”, TRANSLATE IT IN WRITING WITH A DICTIONARY

Paying the Bills

The United States today has evolved a mixed system of private and government responsibility for health care. While private citizens and health insurance companies spent about 230 thousand million dollars on health care in 1986, federal, state and local governments spent 179 thousand million dollars for medical services of all kinds. Public funds financed much of the research on the artificial heart, but it was a private corporation. Humana, which paid for artificial heart surgery and patient care. This
interchange between the public and private sectors is typical of how the United States provides many kinds of health and medical services.

How do most Americans pay their medical bills? For the vast majority, the answer is medical insurance. About five out of every six workers, along with their families are covered by group health insurance plans, paid for jointly by the employer and employee or by the employee alone. Under the most common type of health plan, the individual pays a monthly premium, or fee. Typically, employee who wishes more extensive medical coverage will choose a plan requiring higher premiums.

In return, the insurance company covers most major medical costs, except for a minimum amount, called the “deductible”, which the employee pays each year before insurance coverage begins. Benefits then cover a certain percentage, often 80 percent, of the patient's bills in excess of the deductible. Some policies provide that after the employee's bills have reached a certain amount, the insurer covers 100 percent of all additional costs. Depending on the plan, deductible amounts on most health insurance policies range from $50 to $300. Insurance plans vary considerably, with some offering coverage for dental costs and others providing for mental health counseling and therapy.

Another type of health care plan available for many workers is a Health Maintenance Organization (HMO). An HMO is staffed by a group of physicians who agree to provide all of an individual's medical care for a set fee paid on where they can always receive treatment in an emergency, but they often fail to obtain routine medical care that could prevent later chronic or serious illness.

2. THE TEXT SPEAKS ABOUT:

1) combination of public and private healthcare systems
2) percentage of doctors backing the systems
3) position of the US President regarding combinations of the 2 systems
4) health care expenses
5) insurance plans
TASKS 1.9

1. READ THE TEXT “ETHICAL ISSUES” AND AGREE OR DISAGREE WITH THE STATEMENTS. PROVE THEM BY THE FACTS FROM THE ARTICLE:

1) Amniocentesis is performed on all mothers.
2) All types of birth defects can be discovered through amniocentesis.
3) Abortion in the US is performed only when the mother’s life is in danger.
4) Premature infants seldom survive.
5) Modern hospitals have special intensive care units and medical equipment to keep patients alive.
6) Physicians use medical equipment for all unconscious patients even though they will never regain consciousness.
7) Physicians and hospital administrators decide when to turn off machines.
8) Doctors cannot recognize if a patient brain-dead or not.
9) Brain-dead patients become valuable sources of organs for other patients.
10) There are many ethical issues and controversial opinions on their solution.

2. NAME 2 ETHICAL ISSUES TOUCHED UPON IN THE ARTICLE

Ethical Issues

The very successes of modem medicine have produced issues and dilemmas unknown in previous periods. The ability to treat newborn infants with severe deformities is one example. Should expensive operations be performed to save the lives of babies who will be seriously retarded or disabled all of their lives? Some parents want every possible effort made to save such babies, in the hope that treatment to improve their child's condition may be developed in the future. Others, less optimistic, think that an
early death is better than a life of pain and suffering. In either case, who should make such life-or-death decisions: the parents, the physician, the hospital administrators, and the community (through passage of laws)?

The availability of amniocentesis and legal abortion also raises complicated ethical questions. Physicians can now withdraw a small amount of the amniotic fluid that surrounds a fetus in the womb. They can thus obtain fetal cells and study them for possible abnormalities. They can tell, for example, whether the fetus has Down's syndrome, a defect that causes mental retardation and, often, other physical disabilities. Since amniocentesis carries a slight risk of harming the fetus, it is usually performed only on older mothers who are at greater risk for giving birth to infants suffering from birth defects. Many types of birth defects, however, cannot be discovered through amniocentesis.

Parents who learn of severe abnormalities can choose to abort the fetus prior to the 24th week of pregnancy. Abortion, however, is an intensely controversial subject in the United States, as it is in many other countries. Although abortion is legal in the United States, many feel that it should be legal only when the mother's life is in danger. Others believe that abortion should never be undertaken under any conditions.

Occasionally, a very small living infant is born prematurely. Such infants seldom survive, and the risk of their suffering permanent handicaps is great. Many hospitals have established special intensive care units which can now save many such premature babies. But should all premature infants be treated in this manner, especially if they are below a certain weight and therefore likely to suffer severe disabilities?

At the other end of the spectrum, the situation of unconscious patients also triggers intense debate. Physicians can use respirators—machines that breathe for patients—and other medical equipment to keep patients alive indefinitely, even though the patients will not regain consciousness. When is it proper to turn off these machines and let the patient die?

Most physicians now recognize that there is a point at which further treatment merely prolongs the agony of death, and with the family's consent, they may decide not to
resuscitate (restart the stopped heart) an old person dying of cancer. Young victims of auto accidents who are unconscious pose a different set of issues. Often, the decision to maintain an unconscious, critically ill patient may turn on whether or not the person is “brain-dead”—with no measurable electrical activity in the brain. Physicians today recognize that these patients are, in fact, dead, and their life support systems can be removed. Such patients also become valuable sources of organs for transplants for other patients.

TASKS 1.10

1. WHAT DO YOU THINK ABOUT HEALTH CARE IN THE USA? DO A PROJECT “HEALTH CARE IN THE USA”

Some Possible Points to Clear up

1) What are the main problems of the USA?
2) What can you say about ethical problems in medicine in the USA?
3) What are the main achievements of American medicine?
4) What can you say about the routine day of a family doctor?
5) Private medical centers. Pro and con.

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

1) What are the best things of Health Care in the USA and the things you’d like to change? And why?

Unit II. POPULATION
1. ANALYZING THE ARTICLE “POPULATION” COMPLETE THE CHART

<table>
<thead>
<tr>
<th>AGE</th>
<th>Total</th>
<th>65 years of</th>
<th>75 years of</th>
<th>Under 18 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Age</td>
<td>31 percent</td>
<td>6 percent</td>
<td>3 percent</td>
</tr>
</tbody>
</table>
| From 1950 to 2000 the total resident population of the United States increased from 150 million to 281 million, representing an average annual growth rate of 1 percent. During the same period, the population 65 years of age and over grew almost twice as rapidly and increased from 12 to 35 million persons. The population 75 years of age and over grew almost three times as quickly as the total population, increasing from 4 to 17 million persons. Projections indicate that the rate of population growth during the next 50 years will be somewhat slower for all age groups and older age groups will continue to grow more than twice as rapidly as the total population. During 1950 to 2000, the U.S. population grew older. From 1950 to 2000 the percent of the population under 18 years of age fell from 31 percent to 26 percent while the percent 65–74 years increased from 6 to 7 percent and the percent 75 years and over increased from 3 to 6 percent. From 2000 to 2050 it is anticipated that the percent of the population 65 years and over will increase substantially. Between 2000 and 2050 the percent of the population 65–74 years of age will increase from 7 to 9 percent and the population 75 years and over will increase from 6 to 12 percent. By 2040 the population 75 years and over will exceed the population 65–74 years of age. The aging of the population has important consequences for the health care system. As the older fraction of the population increases, more services will be required for the treatment and management of chronic and acute health conditions. Providing health care services needed by Americans of all ages will be a major challenge in the 21st century.
Why is it so important to know the racial and ethnic composition of the population?

Race and Ethnicity

Changes in the racial and ethnic composition of the population have important consequences for the Nation’s health because many measures of disease and disability differ significantly by race and ethnicity. One of the overarching goals of U.S. public health policy is elimination of racial and ethnic disparities in health. Diversity has long been a characteristic of the U.S. population, but the racial and ethnic composition of the Nation has changed over time. In recent decades the percent of the population of Hispanic origin and Asian or Pacific Islander race has risen. In 2000 over one-quarter of adults and more than one-third of children identified themselves as Hispanic, as black, as Asian or Pacific Islander, or as American Indian or Alaska Native. In the 1980 and 1990 decennial censuses, Americans could choose only one racial category to describe their race. In the 2000 census the question on race was modified to allow the choice of more than one racial category. Although overall a small percent of persons of non-Hispanic origin selected two or more races in 2000, a higher percent of children than
adults were described as being of more than one race. The number of American adults identifying themselves or their children as multiracial is expected to increase in the future. In 2000 the percent of persons reporting two or more races also varied considerably among racial groups. For example, the percent of all persons reporting a specified race who mentioned that race in combination with one or more additional racial groups was 1.4 percent for white persons and 37 percent for American Indians or Alaska Natives.

TASKS 2.3

1. READ THE TEXT

Medical Tourism in the USA

A growing number of American patients are seeking medical treatment abroad. In 2006, about 150,000 American citizens traveled to Latin America and Asia for medical treatment. In 2007, the figure increased to approximately 300,000. By 2010, experts say that the number could increase to well over 1 million. American patients are opting to undergo medical treatment abroad for procedures such as: face lifts, heart bypasses and fertility treatments. For many people who require medical treatment, the last thing they want to do is travel. However, due to the high cost of medical treatment in the USA, many American patients are going abroad for medical treatments. Their purpose is to save 50% to 80% on medical treatment conducted by doctors who are often trained in the United States, at hospitals that maintain the precise standards of patient care and safety. Many American patients visit South or Central American countries like Brazil, Argentina or Costa Rica for cosmetic treatment, as they can avail themselves of advanced cosmetic surgery. Mexico is a popular destination for American patients who need primary and dental care. “Dental Tourism” was developed rapidly as Americans traveled to Central American countries such as Costa Rica for dental treatment is not covered by their insurance. It is estimated that about 40% of today's medical tourism
from the USA is for dental work. Costa Rica is a popular place for American medical tourists to travel to in order to receive quality dental care at about half the price. According to a study completed in November 2007, by the National Center for Policy Analysis (NCPA), most American patients obtain medical treatment in Mexico and other Latin American countries. Currently, countries like India and Thailand provide state-of-the-art amenities for critical treatments like hip or knee replacements and cardiac surgery. Some other popular destinations are Singapore, Belgium and South Africa. Many people from Northern and Western Europe visit Central and Eastern Europe for low-priced medical and dental care.

Reasons Why American Patients are Traveling Abroad for Medical Treatments:

Patients from the US are provided with brand new facilities and equipment due to fierce competition among hospitals and global medical tourism centers. Though price is an important factor, there are other benefits of medical tourism. Here are a few reasons why medical tourism is rapidly gaining popularity in the USA.

REMEMBER THE FOLLOWING WORDS:

• bypass – обходное шунтирование
• to avail oneself – пользоваться, воспользоваться
• state-of-the-art – современный, передовой
• amenity – удобства
• fierce – сильный

2. ANSWER THE FOLLOWING QUESTIONS:

1) How many American patients traveled to other countries for medical treatment in 2006?
2) Is this number increasing from year to year?
3) What medical treatment do American patients choose to undergo abroad?
4) Why do Americans go abroad for medical treatment?
5) How many per cent on medical treatment can they save if they go abroad?
6) What countries do Americans prefer to visit to receive cosmetic treatment?
7) What is a popular place for those Americans who need dental care?
8) Why dental tourism was quickly developed in the USA?
9) Where do most American patients get treatment?

3. EXPRESS YOUR AGREEMENT OR DISAGREEMENT WITH THE FOLLOWING STATEMENTS:

1) More and more people in the USA prefer to go abroad for medical treatment because of its high cost.
2) To receive qualified dental care at about half the price American medical tourists go to Mexico.
3) Such countries as India and Thailand provide state-of-the-art amenities for hip and knee replacement reasonable prices and high quality of medical services to patients from the USA.
4) There are good possibilities for patients who are undergoing minor surgery to enjoy their recovery by staying in beautiful surroundings.
5) Cosmetic and dental surgeries are the most popular medical treatments received abroad.
6) American patients go abroad for medical treatment because they like to receive it anonymously.
7) To receive treatment in the USA is more expensive than to travel and receive medical care abroad.

4. FINISH THE SENTENCES CHOOSING THE NECESSARY WORD COMBINATIONS:
1) More and more American patients are seeking medical treatment … (in their own country, abroad, in Russia).
2) American patients choose such medical procedures as … (operations on heart, …)
3) The main purpose of the American patients is … (to enjoy travelling, to save 50-80% on medical treatment, to get better and more qualified medical service).
4) American patients go abroad for medical treatment … (because they want it, because of the high cost of medical treatment in the USA, because they do not trust their doctors).
5) To receive cosmetic treatment American patients visit … (China, France, South or Central American countries).
6) For dental care they prefer to go to … (Germany, England, Mexico).
7) Nowadays such countries as India and Thailand provide modern operations in … (brain surgery, cardiac surgery, hip and knee replacement).
8) Many people visit Central and Eastern Europe for … (better medical treatment, for low-priced medical and dental care, for pleasure).

5. TRANSLATE THE FOLLOWING SENTENCES FROM RUSSIAN INTO ENGLISH:

1) С каждым годом все больше американцев стараются получить лечение за границей.
2) Американцы хотят получать за границей такие медицинские процедуры как подтяжка лица, обходное шунтирование и лечение бесплодия.
3) Американцы предпочитают получать лечение за рубежом из-за очень высокой стоимости лечения в США.
4) Многие американцы могут пользоваться передовыми достижениями в области косметической хирургии в таких странах как Бразилия, Аргентина или Коста Рика.
5) Мехико – это популярное место получения стоматологического лечения среди американцев.
6) Пациентам из Соединенных Штатов предлагают новейшие технологии и современное оборудование из-за жесткой конкуренции среди больниц и медицинских центров.
7) Стоимость медицинского обслуживания в США часто выше, чем расходы на путешествие и получение медицинских услуг за границей.

TASKS 2.4

1. READ THE TEXT WITHOUT A DICTIONARY

Low Costs of Medical Treatment Abroad

For most people, the lower price is the main advantage of medical tourism. USA health care costs are often higher than the combined fee of traveling and receiving medical care abroad. A total face and neck lift procedure can cost about $12,000 in the U.S.A, while a similar procedure will costs around $3,000-4,000 overseas. The price of hip replacement surgery varies from $40,000 to $65,000 in the USA, whereas a similar procedure abroad costs about $8,000 to $18,000, including traveling expenses. India provides reasonable prices and high quality medical services to patients from the US. The prices in India usually vary from 0.25 to one 0.1 of the price of a similar medical procedure in the USA. Thailand - India's major competitor - is about 20% more expensive. Receiving medical treatment in South America can cost between 50-100% more than it would in India.

2. RETELL THE TEXT

TASKS 2.5
1. READ THE TEXT WITHOUT A DICTIONARY

High Quality Healthcare Abroad

By doing the proper research, or consulting with a good agent, you ensure that you will receive high quality medical services with the best doctors in your destination country. Medical treatment centers in many of these countries offer state-of-the-art facilities. This includes new or renovated private hospitals that use cutting edge technology and equipment. The doctors in these facilities are trained to American and European standards, providing service that is equal or greater to what hospitals in USA offer.

2. FIND OUT THE MAIN IDEA

TASKS 2.6

1. READ AND TRANSLATE THE FOLLOWING TEXT

Benefit of Medical Tourism for Minor Procedures

Patients, who are undergoing minor surgery or procedures, can enjoy their recovery by staying in a relaxing vacation environment in beautiful surroundings. Patients accompanied by a family member or friend can enjoy some quality time, relaxing on the beach or going shopping. This can relieve much of the stress that builds up after a surgery. For patients receiving minor treatments, the benefits are even greater.

REMEMBER THE FOLLOWING WORD COMBINATION:

• to undergo minor surgery – подвергнуться малой операции
2. MAKE THE GIST

TASKS 2.7

1. TRANSLATE THE FOLLOWING TEXT WITHOUT A DICTIONARY

Lack of Insurance

The Miami Herald, November 2, 2008 revealed that while the USA continues to debate over their medical insurance system, 61 million people are either uninsured or under-insured. They are rejecting the American health system because it fails to meet their needs and instead they seek medical treatment abroad. According to David E. Williams, principal and co-founder of MedPharma partners, and author of Health Business Blog.com, the most popular medical treatments received abroad are Cosmetic and Dental surgeries as these treatments are usually not covered at all by insurance.

2. FIND OUT THE MAIN IDEA

TASKS 2.8

1. TRANSLATE THE FOLLOWING TEXT

Receiving Treatment Anonymously

American patients who are traveling abroad for medical treatment can receive their treatments in privacy and recover in comfort, without questions and judgment from people who know them.
2. WHAT DO YOU THINK ON THE PROBLEM OF PRIVACY IN GETTING TREATMENT OF ANY KIND?

TASKS 2.9

1. TRANSLATE THE FOLLOWING TEXT

Researching Medical Tourism for USA Patients

Josef Woodman, the author of “Patients beyond Borders” confirmed that for a good experience, it is essential to research available doctors, enquire about success rates, and learn about the facilities beforehand. There are also many quality resources available on the internet to research about medical tourism for USA citizens. The book “Patients beyond Borders”, written by Josef Woodman, is a good source of information about the medical travel industry. Try to interact with representatives of hospitals abroad and with patients who have already traveled abroad for treatment. Search for institutions authorized by the Joint Commission International. It is an affiliate of the group that certifies US hospitals. Also, some foreign hospitals have associations with renowned US facilities, like Johns Hopkins and the Cleveland Clinic. Learn everything you possibly can about the hospitals and doctors before traveling abroad for medical treatment. Medical tourism for USA citizens is a safe and affordable alternative when the necessary research and precautions are taken prior to the journey.

2. GIVE THE SUMMARY OF THE TEXT

3. LOOK THROUGH ALL THE TEXTS CONCERNING MEDICAL TOURISM AND

a) FIND OUT REASONS OF GETTING MEDICAL TREATMENT ABROAD
b) COMPLETE THE FOLLOWING SENTENCES:

1) Lower price is … .
2) If you consult with a good specialist, you will … .
3) Medical centers in many countries offer … .
4) Patients who undergo minor operations can … .
5) Patients accompanied by a family member or friend can enjoy … .
6) There is 61 million people in the USA who are … .
7) The most popular treatments received abroad are … .
8) American patients who travel abroad for medical treatment can receive it … .

TASKS 2.10

1. WHAT DO YOU THINK ABOUT POPULATION AND TREATMENT IN THE USA? DO A PROJECT “POPULATION AND TREATMENT IN THE USA”

   Some Possible Points to Clear up

   1) Why do Americans prefer to receive treatment abroad?
   2) Is treatment in the USA expensive?
   3) Can patients travel alone or are they allowed to be accompanied by their relatives?
   4) Why does a great number of Americans reject the American health system?
   5) What is the advice for Americans to receive qualitative treatment?

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP
1) What are the best things of getting treatment abroad and the things you’d like to change? And why?

Unit III. VACCINATION

TASKS 3.1

1. FILL IN THE CHART WITH THE INFORMATION YOU’LL GET FROM THE TEXT

2. LIST THE ADVANTAGES OF VACCINATION

Vaccination: Adults 65 Years of Age and Over

In the United States influenza resulted in the death of about 36,000 persons 65 years of age and over each year during the 1990s. Pneumococcal disease accounts for more deaths than any other vaccine-preventable bacterial disease. Annual influenza vaccination and one dose of pneumococcal polysaccharide vaccine can lessen the risk of illness and subsequent complications among older persons 65 years of age and over. In 2002, 66 percent of noninstitutionalized adults 65 years of age and over reported an influenza vaccination during the past year, the same percent as in 1999. Between 1989 and 1999 the percent more than doubled to 66 percent and then decreased slightly in 2000 and 2001. Between 1989 and 2002 the percent of adults 65 years of age and over ever having received a pneumococcal vaccine increased sharply from 14 percent to 56 percent. Several factors have been suggested as contributing to these increases: greater acceptance of preventive health care by consumers and practitioners, improved Medicare coverage for these vaccines since 1993, and wider delivery of this care by health care providers other than physicians. Although influenza and pneumococcal vaccination rates have increased for non-Hispanic and Hispanic population groups, substantial gaps persist by race and ethnicity. In 2000–2002 vaccinations against
influenza were received by two-thirds of non-Hispanic white adults, nearly three-fifths of Asian adults, and approximately one-half of Hispanic and non-Hispanic black older adults. Vaccinations against pneumococcal disease were received by nearly three-fifths of non-Hispanic white, and approximately one-third of Asian, non-Hispanic black, and Hispanic older adults. Continued monitoring of vaccination rates for all racial and ethnic groups is needed to apprise efforts to improve rates overall and to reduce disparities in vaccination levels.

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TASKS 3.2

1. GIVE THE SUMMARY OF THE TEXT

Worldwide, crowded refugee camps with contaminated water sources and inadequate sanitation have been well described as foci for cholera outbreaks. The rapidly growing number of refugees resulting from war, civil strife, famine, and natural disasters is expected only to add to the number who has already died as a consequence of such cholera epidemics. The provision of an adequate quantity of purified water and the establishment of suitable facilities for defecation pending appropriate sanitation systems are important measures to help prevent outbreaks of cholera in refugee settings.
Appropriate case management with oral rehydration therapy, community outreach to improve case finding and access to treatment, and hospital management for severe cases can reduce the case-fatality ratio (CFR) in cholera epidemics from more than 50% to less than 1%. In the last decade, however, the CFR in cholera outbreaks in refugee settings, even within the same country, has varied from less than 1% to as high as 25%. Such variation is in part a consequence of the disparate availability of resources needed to effectively manage such outbreaks.

Clearly, more effective strategies to prevent cholera are needed. At present, use of additional interventions to assist in the control of cholera outbreaks in refugee settings is not recommended. Mass antibiotic chemoprophylaxis is considered ineffective and may be associated with the emergence of drug-resistant organisms. In the past, injectable cholera vaccines have been rejected because of low efficacy and too short a duration of protection. The recent availability of more efficacious oral cholera vaccines, such as the recombinant oral B subunit killed whole-cell (rBS-WC) vaccine, its nonrecombinant predecessor, and the live attenuated CVD 103-HgR vaccine, has led to renewed interest in vaccination to prevent outbreaks in situations with high cholera incidence, such as refugee populations. However, controversy surrounds the cost-effectiveness of vaccination in such settings. To address this controversy, we report a cost-effectiveness analysis of several alternative intervention strategies, including vaccination, to control cholera outbreaks in sub-Saharan refugee settings.

2. WHAT IS THE MAIN IDEA OF THE ARTICLE?

1. READ AND TRANSLATE THE PASSAGE FROM THE ARTICLE (JAMA)

Effectiveness and Cost-Benefit of Influenza Vaccination of Healthy Working Adults
Influenza vaccination can have substantial health benefits for persons of any age. Studies have repeatedly demonstrated that influenza vaccination of persons aged 65 years or older is also economically beneficial. It is less certain whether vaccinating healthy working adults younger than 65 years against influenza would result in societal cost savings.

A study of healthy working adults in Minnesota during the 1994-1995 influenza seasons found a net societal benefit of $46.85 per person vaccinated and a 35% reduction in URI.6 Influenza infection rates and vaccine efficacy estimates were not available in that study because confirmatory diagnostic laboratory tests were not conducted. However, other studies of healthy adults have not found similar results, and reviews have concluded that influenza vaccination of healthy adults is unlikely to result in a net cost savings to society.

Our randomized, placebo-controlled study was conducted to further evaluate the health and economic benefits of vaccinating healthy adults. This study was notable because it was conducted during 2 consecutive influenza seasons, it defined the influenza period based on virologic surveillance at the study site, and it used diagnostic testing to confirm influenza infection rates in a subset of participants. This study also used e-mail as the primary means for data collection, which might have contributed to the high participation rate.

Vaccination of healthy working adults provided no overall economic benefit in either year of our study. Furthermore, we were not able to replicate the economic or clinical illness results found in the Minnesota study, even when we used a similar URI case definition (i.e., sore throat and either fever or cough). In particular, it should be noted that the URI rate among placebo recipients in the Minnesota study was 3.3 to 5.3 times higher than among placebo recipients in our study. In our sensitivity analysis, we found that doubling the ILI rate did result in a net cost savings to society of $2.36 per person. However, doubling the ILI rate would presumably also increase the laboratory-confirmed illness rate among the placebo group from 10% to 20%. During nonpandemic
influenza years, influenza illness rates among adults younger than 65 years are generally less than 10%, and influenza illness rates of 20% or greater would be expected to occur very infrequently.

In addition to having substantially different illness rates, other factors in our study also may have contributed to results that are different from those reported in the Minnesota study. The 2 study populations differed by age, sex, income level, and other variables. It is also possible that a lower proportion of the total respiratory illnesses in our study were caused by influenza, thereby reducing our estimate of vaccine effectiveness. This point underscores the importance of using laboratory tests to confirm a subset of clinically defined cases in such studies. Studies of case definitions of influenza have shown that requiring presence of fever in a clinical case definition substantially increases the specificity of the clinical diagnosis. Since the URI case definition is relatively broad and does not require presence of fever, its use to estimate vaccine effectiveness can be expected to dilute the observable benefit of the vaccine.

We were not able to completely maintain blinding with regard to vaccine status in our study, similar to other studies of inactivated influenza vaccine that used saline as a placebo. This is not surprising because arm soreness and redness at the injection site are associated with vaccination against influenza and participants were informed about potential adverse effects as part of the consent process. Although the extent to which this could have biased our findings is unknown, the illness rates and related costs found in our study were comparable with those seen in studies using similar case definitions.

In 1998-1999, when the vaccine and circulating influenza strains were well matched, vaccination clearly had health benefits. In that year, the vaccine efficacy against laboratory-confirmed influenza was 86% and there were statistically significant reductions in ILI, physician visits, and days lost from work among vaccine recipients. In the first year of the study, 1997-1998, when the vaccine and circulating strains were not well matched, the difference between the rates of ILI in the vaccine and placebo groups was not statistically significant.
In interpreting the results of our study, several important points should be kept in mind. First, rates of influenza-associated severe illness and hospitalization, and subsequent cost per illness, are generally much lower in healthy young adults than in elderly persons. Second, the rates of laboratory-confirmed influenza illness in this study (1%-10%) were similar to those found in other studies of adults. In those studies, influenza infection rates ranged from 1% to 26% per year, but approximately two thirds of the years had rates less than 10%. In our study, as in most studies, only a minority of the respiratory illnesses among adults were due to influenza. Third, in approximately 1 of every 10 years, there is a poor antigenic match between vaccine strains and the predominant circulating influenza viruses (Nancy J. Cox, PhD, unpublished data, August 2000).

The cost estimates applied to this study population may not be generalizable to other populations, particularly those with lower incomes or those that lack health care access. However, use of lower labor cost estimates would be expected to further diminish the likelihood of finding cost savings from vaccination. The vaccination cost estimated in our study did not include additional costs for adverse events from vaccination since no additional labor or medical costs were reported in our study. Influenza vaccine associated adverse events that require medical attention are uncommon and the reported adverse effects and adverse events in our study are similar to those in other studies of healthy adults. In our economic analysis, we also did not consider the potential benefits of reducing transmission of influenza to coworkers and household members or the potential benefit of intangibles, such as avoiding the discomforts and inconveniences associated with influenza illness. Including these factors could have increased the likelihood of finding cost savings. Regardless of the cost-benefit of influenza vaccination in healthy adults, some working adults may choose to be vaccinated to reduce their risk of being infected with influenza. However, results of this study could be used to help set societal priorities when vaccine is in short supply.

In conclusion, influenza infection is associated with substantial work absenteeism and health care resource use among healthy working adults. In years in which there is a
good match between vaccine and circulating viruses, vaccination against influenza can have substantial health benefits by reducing rates of ILI, physician visits, and work absenteeism. Nonetheless, our results suggest that vaccination of healthy adults younger than 65 years is unlikely to provide societal economic benefit in most years.

2. WRITE DOWN LETTERS CORRESPONDING TO THE SENTENCES BELOW ACCORDING TO CONSISTENCY OF EVENTS IN THE ARTICLE

a) However, use of lower labor cost estimates would be expected to further diminish the likelihood of finding cost saving from vaccination.

b) However doubling the ILI rate would presumably also increase the laboratory confirmed illness rate among the placebo group.

c) Our randomized, placebo controlled study was conducted to further evaluate the health and economic benefits of vaccinating healthy adults.

d) Vaccination of healthy working adults provided no overall economic benefit in either year of our study.

e) In interpreting the results of our study, several important points should be kept in mind.

f) Influenza infection is associated with substantial work absenteeism and health care resource use among healthy working adults.

g) In our economic analysis we also did not consider the potential benefits of reducing transmission of influenza, to coworkers and house-hold members.

TASKS 3.4

1. READ THE PASSAGE OF THE ARTICLE FROM JAMA

2. GIVE THE TITLE TO THE TEXT
COMMENT

Our cohort study assessed the potential association between pneumococcal vaccine and the reduced risk of acute MI and stroke in an ethnically and socioeconomically diverse male population. In contrast with the findings of a case-control study by Lamontagne et al, our data did not support the protective role of pneumococcal vaccine against acute MI and stroke. Two major methodological distinctions may explain the difference. First, many possible confounding factors were not considered in the case-control study because it was limited to data found in administrative databases. In our study, dietary factors, disease history, and lifestyle factors such as cigarette smoking and physical activity level were comprehensively ascertained and adjusted for in the analyses. Second, the controls chosen by Lamontagne et al were criticized as being likely to be a healthier group. The cohort design protects against selection bias and the prospective ascertainment of relevant exposure factors either from questionnaire data or electronic clinical records protects against biases related to recall. After controlling for potential confounding factors and eliminating possible selection bias, the protective role of pneumococcal vaccine against acute MI and stroke was not observed among men older than 45 years. The results of several sensitivity analyses, including subgroup analyses of men of different age and risk groups or analysis using more specific codes to identify outcomes, also showed no evidence of an inverse association.

Pneumococcal vaccine is recommended to adults aged 65 years or older and to persons who have certain underlying medical conditions that may increase the risk for pneumococcal infection. Such conditions include chronic cardiovascular diseases (eg, congestive heart failure or cardiomyopathy), chronic pulmonary diseases (eg, chronic obstructive pulmonary disease or emphysema), or chronic liver diseases (eg, cirrhosis), and diabetes mellitus. Therefore, it is not surprising to find that the vaccinated population was generally older and had higher prevalences of chronic conditions. The observation that the unadjusted HRs for pneumococcal vaccination were significantly more than 1 for both acute MI and stroke is consistent with the clinical guidelines. The modestly increased risk of MI or stroke in men younger than 65 years is probably due to
residual confounding, because no evidence suggests that the vaccine would increase the risk of vascular events, particularly in men in this age category. With additional adjustment of risk factors of MI or stroke, such as smoking, diabetes, and history of heart diseases in the Cox proportional hazards regression model in the younger than 65 years age group, the HR associated with vaccination reduced to 1.11 (95% CI, 0.98-1.29) for MI and 1.24 (95% CI, 1.05-1.50) for stroke. Such adjustment does not affect the estimate in the 65 years or older age group.

In a recent systematic review and meta-analysis by Huss et al, the authors found a high degree of heterogeneity between trials in the efficacy of pneumococcal polysaccharide vaccine in the prevention of a range of clinical outcomes. They found little evidence of protection against pneumonia among elderly persons or adults with chronic respiratory illness, for whom the pneumococcal vaccine is recommended in many industrialized countries. Trials of higher quality (i.e., those with a double-blind design and adequate concealment of allocation) generally showed little evidence of a protective vaccine effect, regardless of the study population and setting. Although these findings differed from a recent Cochrane review, which found strong evidence supporting the vaccine's efficacy against invasive pneumococcal disease and reported a combined odds ratio (OR) of 0.26 (95% CI, 0.15-0.46), the authors suggested that the inconsistency could be largely explained by the inclusion of 2 earlier studies with inadequate randomization and whose participants had limited access to care and diagnostic procedures in the Cochrane review. If pneumococcal polysaccharide vaccine is not as effective as previously believed in preventing infection and its complications, any putative effect of preventing infection-triggered acute MI or stroke becomes unlikely.

Our findings are consistent with those reported by Smeeth et al, which showed within-person comparisons using the case-series method to study the risks of MI and stroke after common vaccinations and naturally occurring infections. The authors concluded that acute infections are associated with a transient increase in the risk of vascular events. However, influenza, tetanus, and pneumococcal vaccinations do not
produce a detectable increase in the risk of vascular events. Combined with the findings from our study, it appears that both short- and long-term risks of acute MI and stroke are not affected by pneumococcal vaccination.

Pneumococcal vaccination was also found to have no effect on MI in another case-control study. In the study by Meyers et al, the authors administered a standardized questionnaire to 335 patients with MI and 199 patients with fractures. The groups significantly differed by sex, age, BMI, smoking status, family history of heart disease, personal history of cardiovascular disease, and number of self-reported upper respiratory tract infections. Pneumococcal vaccine had been administered to 32% of patients with MI and 39% of patients with fractures, with an adjusted OR of 0.89 (95% CI, 0.60-1.33). The authors concluded that pneumococcal vaccine is not associated with a reduced risk of MI.

The health care delivery systems provide a well-developed infrastructure for conducting a prospective cohort study. The majority of health care for Kaiser Permanente members is delivered within an integrated system of Kaiser Permanente owned and operated medical centers and outpatient facilities. Minimal co-payments are a strong incentive to receive care within the system. Care provided outside the system either through contractual arrangements or for emergency care is captured in outside referral and claims reimbursement data systems. Importantly, for outside clinicians to be reimbursed by the health plan for covered emergent care, claims have to be submitted with documentation of the episode of care, and this information is entered into the administrative data systems. Thus, the capture of care delivered to members is reasonably comprehensive.

One limitation of our study is that we relied on diagnostic codes in the electronic record for acute MI and stroke and on electronic data for exposure. However, although misclassification might exist, it is mostly likely minimal and nondifferential. It seems unlikely that misclassification would introduce a systematic bias on the basis of either exposure or outcome. In addition, the association between this vaccine and acute MI and stroke in women or in very old populations was not addressed in our study.
In conclusion, among a cohort of men aged 45 years or older, receipt of pneumococcal vaccine was not associated with subsequent reduced risk of acute MI and stroke, after accounting for baseline differences in those participants receiving vaccine vs. not receiving vaccine.

NOTES TO THE TEXT:

- MI - myocardial infarction
- CI – confidence interval
- OR - odds ratio
- BMI – body mass index
- HR – hazard ratio

3. MARK THE SENTENCES CORRESPONDING TO THE CONTENT OF THE ARTICLE

1) The data of research did not support the protective role of pneumococcal vaccine against acute myocardial infarction and stroke.
2) Pneumococcal vaccine is recommended to adults aged 60 years only.
3) The modestly increased risk of myocardial infarction or stroke in men younger than 65 years is probably due to residual confounding.
4) The researchers found little evidence of protection against pneumonia among elderly persons or adults with chronic respiratory illness.
5) Both short- and long – term risks of acute myocardial infarction and stroke are affected by pneumococcal vaccination.
6) It seems likely that misclassification would introduce a systematic bias on the basis of either exposure or outcome.
a) WORLDWIDE, crowded refugee camps with contaminated water sources and inadequate sanitation have been well described as foci for cholera outbreaks. The rapidly growing number of refugees resulting from war, civil strife, famine, and natural disasters is expected only to add to the number who has already died as a consequence of such cholera epidemics. The provision of an adequate quantity of purified water and the establishment of suitable facilities for defecation pending appropriate sanitation systems are important measures to help prevent outbreaks of cholera in refugee settings. Appropriate case management with oral rehydration therapy, community outreach to improve case finding and access to treatment, and hospital management for severe cases can reduce the case-fatality ratio (CFR) in cholera epidemics from more than 50% to less than 1%. In the last decade, however, the CFR in cholera outbreaks in refugee settings, even within the same country, has varied from less than 1% to as high as 25%. Such variation is in part a consequence of the disparate availability of resources needed to effectively manage such outbreaks.

Clearly, more effective strategies to prevent cholera are needed. At present, use of additional interventions to assist in the control of cholera outbreaks in refugee settings is not recommended. Mass antibiotic chemoprophylaxis is considered ineffective and may be associated with the emergence of drug-resistant organisms. In the past, injectable cholera vaccines have been rejected because of low efficacy and too short a duration of protection. The recent availability of more efficacious oral cholera vaccines, such as the recombinant oral B subunit killed whole-cell (rBS-WC) vaccine, its nonrecombinant predecessor, and the live attenuated CVD 103-HgR vaccine, has led to renewed interest in vaccination to prevent outbreaks in situations with high cholera incidence, such as refugee populations. However, controversy surrounds the cost-effectiveness of vaccination in such settings. To address this controversy, we report a cost-effectiveness
analysis of several alternative intervention strategies, including vaccination, to control cholera outbreaks in sub-Saharan refugee settings.

b) Multiple studies have shown that vaccination against influenza can reduce the risk of recurrent myocardial infarction (MI), sudden cardiac death, cardiac hospital admissions, need for revascularization, and stroke. A similar finding has been recently reported for pneumococcal polysaccharide vaccine. In the study by Lamontagne et al, the authors hypothesized that besides preventing bacterial infections, pneumococcal vaccination may protect against cardiovascular events by decreasing the extent of atherosclerosis. There were, however, several potential limitations of this study that raise questions about the validity of the results, including preferential inclusion of a healthier cohort, confounding from dietary factors, physical activity, and family history. Moreover, it is known that antibody levels decrease over time. This does not fit with the authors' finding that pneumococcal vaccination appeared to have a greater protective effect over time.

Beyond the study by Lamontagne et al, studies assessing the association between pneumococcal vaccination and vascular events are limited. To address this, we took advantage of information collected as part of an ongoing prospective cohort study, the California Men's Health Study (CMHS), to address the association between vaccination with pneumococcal vaccine and the risk of developing acute MI and stroke, taking into account known and potentially important confounders.

c) The cost-effectiveness of inactivated influenza vaccination in reducing influenza illness, hospitalization, and death is well established in persons aged 65 years or older, a group that is at increased risk of severe influenza-related complications. However, the benefits of annual influenza vaccination of healthy adults younger than 65 years are less clear. Between 1% and 26% of persons aged 18 to 64 years may be infected with influenza annually, and the associated work absenteeism can result in substantial societal costs. To date, only 1 randomized, placebo-controlled cost-effectiveness study
among healthy working adults has been published. That study, conducted from the societal perspective, reported a net savings of $46.85 per healthy adult worker vaccinated against influenza. However, other studies of non–high-risk adults have not shown similar economic benefits or similarly high attack rates of influenza-attributable illness. Most influenza vaccine studies of healthy working adults have been conducted during a single influenza season, limiting their generalizability because influenza illness rates and vaccine efficacy may differ substantially from year to year. In addition, other studies of influenza vaccination of healthy adults have not included laboratory confirmation of influenza illness. Laboratory testing to support epidemiologic findings is important because the specificity of clinical case definitions for influenza can be low and can vary depending on the cocirculation of other respiratory pathogens.

To address these issues, we studied the effectiveness and societal cost-benefit of vaccinating healthy working adults against influenza during the 1997-1998 and 1998-1999 influenza seasons.

2. CORRESPOND THE PASSAGES OF THE ARTICLES ON THE PROBLEM OF VACCINATION FROM JAMA TO THE FOLLOWING TITLES

1) Effectiveness and Cost-Benefit of Influenza Vaccination of Healthy Working Adults
2) Pneumococcal Vaccination and Risk of Acute Myocardial Infarction and Stroke in Men
3) Treatment and Vaccination Strategies to Control Cholera in Sub-Saharan Refugee Settings

TASKS 3.6

1. READ THE TEXT
Hepatitis B Vaccination for Newborns

Good Intentions, Bad Science, Worse Policy

Hepatitis B is a viral disease associated with risky lifestyle choices such as intravenous drug use or promiscuous sex. This virus causes a dangerous and miserable infection that can have long-lasting debilitating effects on the liver, so taking steps to prevent Hepatitis B is a good idea for those at risk.

For infants, Hepatitis B is an especially serious disease. If a pregnant mother carries this virus, it is certainly important to protect her baby from the disease.

However, most normal infants are at low risk for this disease. Infant infections are typically found only in babies born to a Hepatitis B-positive mother, and tests can determine who carries or is infected with the virus. By screening the mothers, only those babies who are at risk would need to be vaccinated at birth.

Perhaps any attempt at prevention would be a good bet if the vaccine were harmless, but it's not. Today there are more reports of adverse reactions from the vaccine than there are reported cases of the disease in children. Data created by the government’s Vaccine Adverse Event Reporting System (VAERS) in 1996 confirm 872 serious adverse events in children under 14 years of age who had been injected with Hepatitis B vaccine. These kids were either taken to an emergency room, had life-threatening health problems, were hospitalized, or were disabled following the vaccination. 214 had the Hepatitis B vaccine alone, and the rest received it in combination with other vaccines. 48 kids died after being injected with Hepatitis B vaccine in 1996 and 13 of them had received the Hepatitis B vaccine alone just before they died. In contrast, in 1996 only 279 cases of Hepatitis B disease were reported in children under age 14.

The World Health Organization only recommends infant vaccination for Hepatitis B in areas where carrier prevalence is 2 percent or greater. This does not apply to the U.S., except for certain ethnic groups in Alaska. But current U.S. health policy is based
on an exaggerated perception of the prevalence of Hepatitis B, and here vaccination is required for every newborn.

An argument has been made that infants are easier and cheaper to vaccinate than adolescents. Does this mean we should vaccinate all infants in order to prepare them for the day when they might become promiscuous and/or intravenous-drug-using teenagers? Beyond this insulting presumption, lawmakers also presume that the vaccination will even last long enough to protect those kids during the supposedly risky teenage years.

This amazing degree of non-science and arrogance is shaping the national health policy for our families. Policymakers based their 1991 infant Hepatitis B vaccination recommendations on the assumption that the vaccinations would last from infancy through adolescence. However, scientific information has not only failed to support that premise, it has often contradicted it.

The story behind this policy is that the maker of Hepatitis B vaccine, Merck, makes almost $1 billion USD a year from this single product. One wonders how many lawmakers this amount of money could buy.

The cost to our society of all the injuries and medical services generated by this vaccine is incalculable. It’s time to require scientific proof that these vaccines are safe, effective, and necessary before we naively permit state-enforced injection of an unproven medicine into our newborns.

2. GIVE SUMMARY TO THE TEXT

_Clichés to be used:_

<table>
<thead>
<tr>
<th>The text is about …</th>
<th>Данный текст о …</th>
</tr>
</thead>
<tbody>
<tr>
<td>It concerns the problem …</td>
<td>Он касается проблем …</td>
</tr>
<tr>
<td>As far as I’ve understood …</td>
<td>Насколько я понял …</td>
</tr>
<tr>
<td>It should be noted that …</td>
<td>Следует отметить, что …</td>
</tr>
<tr>
<td>Taking into account …</td>
<td>Принимая во внимание, …</td>
</tr>
</tbody>
</table>
Study of Swine Flu Spread Shows That Boys Infect Boys, Girls Infect Girls

1. Boys predominantly pass on flu to other boys and girls to girls, according to a new study of how swine flu spread in a primary school during the 2009 pandemic, published in the journal Proceedings of the National Academy of Sciences. The results also suggest that flu transmission is most intensive between children of the same class, but that sitting next to an infected person does not significantly increase a child's risk of catching flu. The data will help researchers to model how epidemics spread and how interventions such as school closures can help contain an outbreak.

In the study, researchers from Imperial College London, the US Centers for Disease Control and Prevention (CDC) and the Pennsylvania Department of Health analysed how social networks influenced the spread of H1N1 pandemic flu in an elementary school in Pennsylvania.

2. The results show that children are about three times more likely to transmit flu to children of the same gender than to children of the opposite gender. The researchers also found that the transmission rate is about five times higher between classmates than between children in a different class in the same grade, and about 25 times higher than between children in different grades. However, sitting next a child with flu does not significantly raise a child's risk of catching it.
The study involved 370 pupils (81 per cent of children in the school) from 295 households. The researchers collected extensive data from seating charts, school timetables, bus schedules, nurse logs, attendance records and questionnaires. Although it is impossible to determine exactly who caught flu from whom, the researchers used sophisticated statistical methods to probabilistically reconstruct the pattern of spread and estimate the rates of transmission in different settings.

3. “Mathematical models are useful for predicting how outbreaks will spread, but in order to make the models accurate, we need to supply them with data about how disease spreads in the real world”, said Dr Simon Cauchemez, the lead author of the study from the Medical Research Council Centre for Outbreak Analysis and Modelling at Imperial College London. This is one of the most comprehensive studies to date on how a flu epidemic spreads between children in school, and it tells us a great deal about how social networks influence transmission.

“The data from this study will help us make more accurate models, which can help public health officials to handle epidemics effectively. For example, these new models could help us better understand whether and when it would be appropriate to close a school or whether it might be better to close individual classes or grades”.

4. The school that was studied in this project closed 18 days after the outbreak began, when 27 per cent of pupils had already shown symptoms. According to the analysis, transmission rates were falling at this stage, and closing the school probably had little impact on the spread of the epidemic.

Dr David Swerdlow, Senior Advisor for Epidemiology and Emergency Response, National Center for Immunization and Respiratory Diseases, at the CDC, said: “This was a unique opportunity at the inception of the 2009 influenza A (H1N1) pandemic to learn about transmission in social networks. The investigation demonstrates the benefits
of partnerships as the collaboration included Imperial College London, the Pennsylvania Department of Heath, and CDC”.

2. ANSWER THE QUESTIONS:
   1) How did social network influence the spread of H1N1 pandemic flu in an elementary school in Pennsylvania?
   2) What methods were used to reconstruct the pattern of spread?
   3) How will the collected data help public health officials?
   4) Is it necessary to study how a flu epidemic spreads between children in schools in Russia?

3. УКАЖИТЕ, КАКОЙ ЧАСТИ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИНФОРМАЦИЯ:

   It wasn’t necessary to close the school in Pennsylvania since transmission rates were already falling.

   • 1
   • 2
   • 3
   • 4

4. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

Many European countries did the same research to model how swine flu spread.

   • в тексте нет информации
   • истинным
   • ложным
5. ОПРЕДЕЛИТЕ ПРАВДИВЫЕ УТВЕРЖДЕНИЯ

1) Результаты исследования помогли выявить причины заболевания свиным гриппом.
2) Риск заболевания свиным гриппом ниже у детей, обучающихся в одном классе.
3) Данное исследование может помочь министерству здравоохранения действовать более эффективно во время эпидемий.
4) Школа в Пенсильвании была закрыта, когда уже 27% учеников обнаружили симптомы заболевания.

TASKS 3.8

1. LOOK THROUGH THE TEXT, PAY ATTENTION TO THE WORDS OF LATIN ORIGIN AND INTERNATIONAL WORDS (WITHOUT A DICTIONARY)

2. ANSWER THE QUESTION “WHAT IS THE ARTICLE DEVOTED TO”? USE THE FOLLOWING EXPRESSIONS:

The article touches upon the problem of . . .
The main idea of the article is to describe (to explain, to show, to compare)
The article deals with the problem of . . .
The author of the article mentions (explains, touches upon).

Microbes in the Food you Eat or Water you Drink Could Make you Sick

Every year, millions of people worldwide become ill from eating contaminated foods. Although many cases of foodborne illness or “food poisoning” are not reported, the U.S. Centers for Disease Control and Prevention (CDC) estimates there are 76
millions of illnesses, 325,000 hospitalizations, and 5,200 deaths in the United States each year that are caused by foodborne bacteria. Bacteria, viruses, and protozoa can cause these illnesses, some of which can be fatal if not treated properly.

Poor manufacturing processes or poor food preparation can allow microbes to grow in food and subsequently infect you. *Escherichia coli* (E. coli) bacteria sometimes persist in food products such as undercooked hamburger meat and unpasteurized fruit juice. These bacteria can have deadly consequences in vulnerable people, especially children and the elderly.

*Cryptosporidium* are bacteria found in fecal matter and can get into lake, river, and ocean water from sewage spills, animal waste, and water runoff. They can be released in the millions from infectious fecal matter. People who drink, swim, or play in infected water can get sick.

People, including babies, with diarrhea caused by *Cryptosporidium* or other diarrhea-causing microbes, such as *Giardia* and *Salmonella*, can infect others while using swimming pools, water parks, hot tubs, and spas.

**Transplanted Animal Organs May Harbor Germs**

As researchers investigate the possibility of transplanting animal organs, such as pig hearts, into people, they must guard against the risk that organs also may transmit microbes that were harmless to the animal into humans, where they indeed may cause disease.

3. **GIVE THE RUSSIAN EQUIVALENTS TO THE FOLLOWING WORD COMBINATIONS (FIND IN THE TEXT)**

- people worldwide –
- food poisoning –
- can cause illnesses-
poor manufacturing processes –
poor food preparation –
persist -
fecal matter –
animal waste –
water runoff –
get sick –
diarrhea –

4. TRANSLATE INTO ENGLISH:

1) Каждый год миллионы людей во всем мире заболевают от приема зараженной пищи.
2) Центр контроля и профилактики болезней в США насчитывает 76 миллионов болезней, 325 000 госпитализированных людей и 5 200 смертей в США каждый год, которые вызваны бактериями пищи, приготовленной дома.
3) Плохое производство и плохое приготовление пищи позволяют микробам расти в пище и следовательно заражать людей.
4) Бактерии, вирусы, протозои (простейшие) могут вызвать болезни, некоторые из них могут быть смертельными, если не лечить вовремя.
5) Бактерии могут иметь смертельные последствия у восприимчивых людей, особенно у детей и пожилых людей.

5. ANSWER THE QUESTIONS:

1) How many people become sick from eating contaminated foods according to CDC data in the USA?
2) What microbes can cause “food poisoning”?
3) What allows microbes to grow in food and subsequently infect people?
4) What bacteria persist sometimes in food products?
5) What people are vulnerable to bacteria?
6) What bacteria can get into lake, river and ocean water?
7) What are the sources of infections?

6. DIVIDE THE TEXT INTO LOGICAL PARTS

7. GIVE THE SUMMARY OF EACH PART IN 2-3 SENTENCES

TASKS 3.9

1. WHAT DO YOU THINK ABOUT VACCINATION IN THE USA? DO A PROJECT “VACCINATION IN THE USA”

Some Possible Points to Clear up

1) Sources of infection by germs in many different ways.
2) A healthy person can be a germ carrier and pass it on to others.
3) Microbes can make us sick.
4) What measures make us healthy?

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

1) What are the best things of giving protective vaccines and the things you’d like to change? And why?

Unit IV. FEDERAL PROGRAMS
Prenatal care that begins in the first trimester and continues throughout pregnancy reduces the risk of maternal morbidity and poor birth outcomes. Appropriate prenatal care can enhance pregnancy outcome and long-term maternal health by managing preexisting and pregnancy-related medical conditions, providing health behavior advice, and assessing the risk of poor pregnancy outcome. Attitudes toward pregnancy, lifestyle factors, and cultural beliefs have been suggested as reasons women delay recommended prenatal care. Financial and health insurance problems are among the most important barriers to such care. Expansion of Medicaid coverage for pregnancy-related services has increased availability and use of prenatal care by low income women. During the last three decades, the percent of mothers reporting prenatal care beginning in the first trimester rose from 68 percent in 1970 to almost 84 percent by 2002. This upward trend reflects increases during the 1970s and the 1990s. Increases in use of prenatal care beginning in the first trimester are observed among mothers in all major racial and ethnic groups. Increases in use of prenatal care in the 1990s were greatest for those with the lowest rates of care: Hispanic, non-Hispanic black, and American Indian or Alaska Native women. Important racial and ethnic differences in the percent of mothers reporting early prenatal care persist. In 2002 the percent receiving early care was higher for non-Hispanic white women than for non-Hispanic black women, American Indian or Alaska Native women, and most groups of Hispanic women. In 2002 about 4 percent of women began care in the third trimester of pregnancy or received no care at all, compared with 6 percent in 1990. The proportion of women receiving late or no prenatal care was highest among American Indian or Alaska Native women, non-Hispanic black women, and women of Mexican origin (6–8 percent).
## Prenatal Care

<table>
<thead>
<tr>
<th>Prenatal Care</th>
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</thead>
<tbody>
<tr>
<td>Prenatal care begins…</td>
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<tr>
<td>Prenatal care includes…</td>
<td></td>
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<tr>
<td>The increase in the use of Prenatal care</td>
<td></td>
</tr>
<tr>
<td>Ethnic differences</td>
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</tr>
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</table>

### TASKS 4.2

1. REMEMBER THE FOLLOWING WORDS:

- amendment – поправка
- eligibility – право на избрание, преемственность
- to be eligible for – иметь право быть членом
- to gear – направлять
- to reimburse – возвращать
- to deem – полагать, считать, думать.
What are Medicare and Medicaid?

Medicaid and Medicare are two governmental programs that provide medical and health-related services to specific groups of people in the United States. Although the two programs are very different, they are both managed by the Centers for Medicare and Medicaid Services, a division of the U.S. Department of Health and Human Services. Medicare is a social insurance program that serves more than 44 million enrollees (as of 2008). The program costs about $432 billion, or 3.2% of GDP, in 2007. Medicaid is a social welfare (or social protection) program that serves about 40 million people (as of 2007) and costs about $330 billion, or 2.4% of GDP, in 2007. Both Medicaid and Medicare were created when President Lyndon B. Johnson signed amendments to the Social Security Act on July 30, 1965.

Tasks 4.3

1. READ THE TEXT

What is Medicaid?

Medicaid is a means-tested health and medical services program for certain individuals and families with low incomes and few resources. Primary oversight of the program is handled at the federal level, but each state establishes its own eligibility standards, determines the type, amount, duration, and scope of services, sets the rate of payment for services, and administers its own Medicaid program.

2. GIVE THE SUMMARY OF THE TEXT
1. READ THE TEXT

What services are provided with Medicaid?

Although the States are the final deciders of what their Medicaid plans provide, there are some mandatory federal requirements that must be met by the States in order to receive federal matching funds. Required services include in-patient hospital services, out-patient hospital services, prenatal care, vaccines for children, physician services, nursing facility services for persons aged 21 or older, family planning services and supplies, rural health clinic services, home health care for persons eligible for skilled-nursing services, laboratory and X-ray services, pediatric and family nurse practitioner services, nurse-midwife services, federally qualified health-center (FQHC) services and ambulatory services, early and periodic screening, diagnostic, and treatment (EPSDT) services for children under age 21.

States may also provide optional services and still receive Federal matching funds. The most common of the 34 approved optional Medicaid services are diagnostic services, clinic services, intermediate care facilities for the mentally retarded, prescribed drugs and prosthetic devices, optometrist services and eyeglasses, nursing facility services for children under age 21, transportation services, rehabilitation and physical therapy services, home and community-based care to certain persons with chronic impairments.

2. WHAT IS THE MAIN IDEA OF THE TEXT?
Who is eligible for Medicaid?

Each state sets its own Medicaid eligibility guidelines. The program is geared towards people with low incomes, but eligibility also depends on meeting other requirements based on age, pregnancy status, disability status, other assets, and citizenship. States must provide Medicaid services for individuals who fall under certain categories of need in order for the state to receive federal matching funds. For example, it is required to provide coverage to certain individuals who receive federally assisted income-maintenance payments and similar groups who do not receive cash payments. Other groups that the federal government considers "categorically needy" and who must be eligible for Medicaid include individuals who meet the requirements for the Aid to Families with Dependent Children (AFDC) program that were in effect in their state on July 16, 1996; children under age 6 whose family income is at or below 133% of the Federal poverty level (FPL); pregnant women with family income below 133% of the FPL; supplemental Security Income (SSI) recipients; recipients of adoption or foster care assistance under Title IV of the Social Security Act; special protected groups such as individuals who lose cash assistance due to earnings from work or from increased Social Security benefits; children born after September 30, 1983 who are under age 19 and in families with incomes at or below the FPL; certain Medicare beneficiaries.

States may also choose to provide Medicaid coverage to other similar groups that share some characteristics with the ones stated above but are more broadly defined. These include infants up to age 1 and pregnant women whose family income is not more than a state-determined percentage of the FPL; certain low-income and low-resource children under the age of 21; low-income institutionalized individuals; certain aged, blind, or disabled adults with incomes below the FPL; certain working-and-disabled persons with family income less than 250 percent of the FPL; some individuals infected with tuberculosis; certain uninsured or low-income women who are screened for breast or cervical cancer; certain “medically needy” persons, which allow States to extend Medicaid eligibility to persons who would be eligible for Medicaid under one of
the mandatory or optional groups, except that their income and/or resources are above the eligibility level set by their State. Medicaid does not provide medical assistance for all poor persons. In fact, it is estimated that about 60% of America's poor are not covered by the program.

2. MAKE UP A PLAN OF THE TEXT

TASKS 4.6

1. READ THE TEXT WITHOUT A DICTIONARY

Who pays for services provided by Medicaid?

Medicaid does not pay money to individuals, but operates in a program that sends payments to the health care providers. States make these payments based on a fee-for-service agreement or through prepayment arrangements such as health maintenance organizations (HMOs). Each State is then reimbursed for a share of their Medicaid expenditures from the Federal Government. This Federal Medical Assistance Percentage (FMAP) is determined each year and depends on the State's average per capita income level. Richer states receive a smaller share than poorer states, but by law the FMAP must be between 50% and 83%.

States may impose nominal deductibles, coinsurance, or copayments on some Medicaid beneficiaries for certain services. However, the following Medicaid beneficiaries must be excluded from cost sharing pregnant women, children under age 18, and hospital or nursing home patients who are expected to contribute most of their income to institutional care. All Medicaid beneficiaries must be exempt from copayments for emergency services and family planning services.

2. WHAT IS THE MAIN IDEA OF THE TEXT?
What is Medicare?

Medicare is a Federal health insurance program that pays for hospital and medical care for elderly and certain disabled Americans. The program consists of two main parts for hospital and medical insurance (Part A and Part B) and two additional parts that provide flexibility and prescription drugs (Part C and Part D).

Medicare Part A, or Hospital Insurance (HI), helps to pay for hospital stays, which includes meals, supplies, testing, and a semi-private room. This part also pays for home health care such as physical, occupational, and speech therapy that is provided on a part-time basis and deemed medically necessary. Care in a skilled nursing facility as well as certain medical equipment for the aged and disabled such as walkers and wheelchairs are also covered by Part A. Part A is generally available without having to pay a monthly premium since payroll taxes are used to cover these costs.

Medicare Part B is also called Supplementary Medical Insurance (SMI). It helps pay for medically necessary physician visits, outpatient hospital visits, home health care costs, and other services for the aged and disabled. For example, Part B covers durable medical equipment (canes, walkers, scooters, wheelchairs, etc.); physician and nursing services; X-rays, laboratory and diagnostic tests; certain vaccinations; blood transfusions; renal dialysis; out-patient hospital procedures; some ambulance transportation; immunosuppressive drugs after organ transplants; chemotherapy; certain hormonal treatments; prosthetic devices and eyeglasses.

Part B requires a monthly premium ($96.40 per month in 2009), and patients must meet an annual deductible ($135.00 in 2009) before coverage actually begins. Enrollment in Part B is voluntary.

Medicare Advantage Plans (sometimes known as Medicare Part C, or Medicare + Choice) allow users to design a custom plan that can be more closely aligned with their
medical needs. These plans enlist private insurance companies to provide some of the coverage, but details vary based on the program and eligibility of the patient. Some Advantage Plans team up with health maintenance organizations (HMOs) or preferred provider organizations (PPOs) to provide preventive health care or specialist services. Others focus on patients with special needs such as diabetes.

In 2006, Medicare expanded to include a prescription drug plan known as Medicare Part D. Part D is administered by one of several private insurance companies, each offering a plan with different costs and lists of drugs that are covered. Participation in Part D requires payment of a premium and a deductible. Pricing is designed so that 75% of prescription drug costs are covered by Medicare if you spend between $250 and $2,250 in a year. The next $2,850 spent on drugs is not covered, but then Medicare covers 95% of what is spent past $3,600.

2. MAKE UP A PLAN OF THE TEXT

TASKS 4.8

1. READ THE TEXT

What about Services that are not Provided through Medicare?

Supplemental coverage for medical expenses and services that are not covered by Medicare are offered through MediGap plans. MediGap consists of 12 plans that the Centers for Medicare and Medicaid Services have authorized private companies to sell and administer. Since the availability of Medicare Part D, MediGap plans are no longer able to include drug coverage.

2. WHAT IS THE MAIN IDEA OF THE TEXT?
1. READ THE TEXT

Who is Eligible for Medicare?

To be eligible for Medicare, an individual must either be at least 65 years old, under 65 and disabled, or any age with End-Stage Renal Disease (permanent kidney failure that requires dialysis or a transplant.) In addition, eligibility for Medicare requires that an individual is a U.S. citizen or permanent legal resident for 5 continuous years and is eligible for Social Security benefits with at least ten years of payments contributed into the system.

3. RETELL THE TEXT

2. WHAT IS THE MAIN IDEA OF THE TEXT?

Who Pays for Services Provided by Medicare?

Payroll taxes collected through FICA (Federal Insurance Contributions Act) and the Self-Employment Contributions Act are a primary component of Medicare funding. The tax is 2.9% of wages, usually half paid by the employee and half paid by the employer. Moneys are set aside in a trust fund that the government uses to reimburse doctors, hospitals, and private insurance companies. Additional funding for Medicare services comes from premiums, deductibles and coinsurance.
3. LOOK THROUGH ALL THE TEXTS OF THE UNIT

4. ASK THE QUESTIONS TO THE UNDERLINED WORDS. BEGIN YOUR QUESTIONS WITH THE WORDS who, what, why, how, how much, how many.

1) Medicaid and Medicare **provide** medical service to specific groups of people in the USA.

2) Medicare costs about **$432 billion**.

3) Medicaid serves **about 40 million people**.

4) Medicaid and Medicare **were created** when President Lyndon B. Johnson signed amendments to the Social Security Act on July 30, 1965.

5) Compulsory Medicaid services **include** in-patient services, out-patient services, prenatal care, vaccines for children, physician services, nursing facility services for persons aged 21 and older etc.

6) Medicaid **is developed** for people with low incomes but eligibility also depends on such demands as age, pregnancy status, disability status and citizenship.

7) Pregnant women, children under 18, hospital or nursing home patients **must be excluded** from cost sharing.

8) Medicare **is a Federal health insurance program** that pays for hospital and medical care for elderly and certain disabled Americans.

9) Medicare **consists of 4 parts**.

10) People who are 65 years old, under 65, disabled **are eligible** for Medicare.

5. REACT THE FOLLOWING STATEMENTS. CORRECT THE SENTENCES IF THEY DO NOT CORRESPOND TO THE CONTENT OF THE TEXT:

1) Medicaid is a program for people over 65.
2) People who are eligible for Medicaid are families with dependent children, children under 6 whose income is below 133% of the Federal poverty level, pregnant women with family income below 133% of the FPL.

3) Medicaid provides medical care for all poor persons.

4) Medicaid pays money to people whenever they need it.

5) Medicare is a Federal health insurance program that pays medical care for people with low income.

6) Medicare Health Insurance pays hospital stays, home health care.

7) Part B (Supplementary Medical Insurance) pays some tests, vaccinations, blood transfusions etc.

8) Enrollment in Part B is compulsory.

6. COMPLETE THE FOLLOWING STATEMENTS:

1) Medicare and Medicaid provide … .

2) Medicaid serves … .

3) The obligatory services of Medicaid are … .

4) Medicaid is meant for … .

5) There are also some groups eligible for Medicaid such as … .

6) Medicare is meant for … .

7) Medicare consists of … .

8) To be eligible for Medicare one must be … .

TASKS 4.11

1. WHAT DO YOU THINK ABOUT FEDERAL PROGRAMS MEDICARE AND MEDICAID? DO A PROJECT “MEDICARE MEDICAID”

Some Possible Points to Clear up
1) Are Medicare and Medicaid similar programs?
2) Who can receive treatment thanks to Medicaid?
3) Who finances Medicaid?
4) How many parts does Medicare consist of?
5) How is Medicare financed by?

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

1) What are the best things of Medicare and Medicaid and the things you’d like to change? And why?

Unit V. HEALTH RISK FACTORS

TASKS 5.1

1. READ THE TEXT

Smoking

As the leading cause of preventable death and disease in the United States, smoking is associated with significantly increased risk of heart disease, stroke, lung cancer, and chronic lung diseases. Smoking during pregnancy contributes to elevated risk of miscarriage, premature delivery, and having a low-birth weight infant. Preventing smoking among teenagers is critical since smoking usually begins in adolescence. Decreasing cigarette smoking among adolescents and adults is a major public health objective for the Nation. Cigarette smoking among adult men and women declined substantially following the first Surgeon General's Report on smoking in 1964.
1990 the percent of adults who smoke has continued to decline but at a slower rate than previously. In 2002, 25 percent of men and 20 percent of women were smokers. Cigarette smoking by adults continues to be strongly associated with educational attainment. Among adults, persons with less than a high school education were almost three times as likely to smoke as those with a bachelor's degree or more education. Among high school students, the percent reporting recent cigarette smoking decreased between 1997 and 2003 after increasing in the early 1990s. During the last decade, a similar percent of male and female students reported smoking. Despite the declines in cigarette smoking rates among high school students, 26 percent of high school students in grade 12 were current smokers in 2003, and 13 percent smoked on 20 or more days in the past month (frequent smokers). Many high school students who were frequent smokers have already become nicotine dependent. Among mothers with a live birth, the percent reporting smoking cigarettes during pregnancy declined between 1989 and 2002. Eleven percent of mothers with a live birth in 2002 reported smoking cigarettes during pregnancy. Maternal smoking has declined for all racial and ethnic groups, but differences among these groups persist. In 2002 the percent of mothers reporting tobacco use during pregnancy was highest for American Indian or Alaska Native mothers (20 percent), non-Hispanic white mothers (15 percent), and Hawaiian mothers (14 percent).

2. FILL IN THE CHART WITH THE INFORMATION YOU’LL GET FROM IT

| Correlation between smoking and diseases |  |
Benefits of regular physical activity include a reduced risk of premature mortality and reduced risks of coronary heart disease, diabetes, colon cancer, hypertension, and osteoporosis. In addition physical activity can enhance physical functioning and aid in weight control. It also improves symptoms associated with musculoskeletal conditions and mental health conditions such as depression and anxiety. Although vigorous physical activity produces the greatest cardiovascular benefits, moderate amounts of physical activity are associated with lower levels of mortality. Among older persons, even small amounts of physical activity may improve cardiovascular functioning. In 2003, 40 percent of female high school students and 27 percent of male high school
students reported a level of physical activity that did not meet the criteria for the recommended amount of either moderate or vigorous physical activity. The percent that reported not engaging in recommended amounts of moderate and vigorous physical activity was higher among students in 11th and 12th grade than among students in 9th and 10th grade. Between 2001 and 2003 the percent of high school students reporting an insufficient amount of moderate and vigorous physical activity remained stable. In 2002 nearly 40 percent of noninstitutionalized adults 18 years of age and over reported that they did not engage in physical activity during leisure time. The trend in leisure-time physical activity among adult men and women has remained stable in recent years. Among men and women, the percent that are physically inactive during leisure time increases with age. More than one-half of adults 65 years of age and over indicated being physically inactive during leisure time compared with about one-third of adults 18–44 years of age. Women were more physically inactive during leisure time than men of the same age, consistent with the pattern found among male and female high school students. Leisure-time physical activity is one component of an active, healthy lifestyle and is reflective of overall activity. A 2000 study that looked at both usual daily activity and leisure-time physical activity showed that, consistent with the pattern found in leisure-time activity, women were more likely than men to never engage in any physical activity overall, and men were more likely than women to engage in a high level of physical activity overall.

2. FILL IN THE CHART WITH THE HELP OF GAINED INFORMATION

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<thead>
<tr>
<th>Benefits of regular physical activity</th>
<th>male</th>
<th>female</th>
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<tr>
<td>Physical activity among high school students</td>
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<tr>
<td>Physical activity in leisure-time</td>
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</table>
1. WHILE READING THE TEXT PAY ATTENTION TO THE FOLLOWING PROBLEMS

Limitation of Activity: Children

Limitation of activity due to chronic physical, mental, or emotional disorders or deficits is a broad measure of health and functioning that gauges a child's ability to engage in major age-appropriate activities. Play is the primary activity for preschool children while schoolwork is the primary activity for children 5 years of age and over. Estimates of the number of children with an activity limitation may differ depending on the type of disabilities included and the methods used to identify them. The National Health Interview Survey identifies children with activity limitation through questions about specific limitations in play, self-care, walking, memory, and other activities and through a question about current use of special education or early intervention services. A child is classified as having an activity limitation due to a chronic condition if at least one of the conditions causing limitations is a chronic physical, mental, or emotional problem. Comparable national data on activity limitation have been available since 1997. Between 1997 and 2002 the percent of children with activity limitation was 6–7 percent. The percent of children with limitation of activity has varied consistently by age and sex. In 2001–02 the percent of children with activity limitation was significantly higher among school-age children than among preschoolers, primarily due to the number of school-age children identified solely by participation in special education. Limitation of activity occurred nearly twice as often among boys as among girls. Physiological, maturational, behavioral, and social differences between boys and girls have been suggested as explanations for the higher prevalence of activity limitation in boys. In 2001–02 the leading chronic health conditions causing activity limitation in children differed by age. Among preschool children, the three chronic conditions most often
mentioned were speech problems, asthma, and mental retardation. Among all school-age children, learning disability and Attention Deficit Hyperactivity Disorder (ADHD) were among the top three leading causes of activity limitation. The third leading cause among younger school-age children was speech problems and among older school-age children it was other mental, emotional, and behavioral problems.

2. FILL IN THE CHART USING THE GAINED INFORMATION

<table>
<thead>
<tr>
<th>1) types of disabilities</th>
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<tr>
<td>2) primary activity for</td>
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<tr>
<td>preschool children</td>
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<td>3) limitation in play</td>
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<tr>
<td>4) classification of activity limitation</td>
</tr>
<tr>
<td>5) differences between boys’ and girls’ activity limitation</td>
</tr>
<tr>
<td>6) age differences in limitation</td>
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</tbody>
</table>

TASKS 5.4

1. READ THE TEXT

Limitation of Activity: Working-Age Adults

Measuring limitations in everyday activities due to chronic physical, mental, or emotional problems is one way to assess the impact of health conditions on self care and social participation. The effect that chronic health conditions have on activity limitation may vary with the availability of supportive and health care services. In the National Health Interview Survey, limitation of activity in adults includes limitations in handling personal care needs (activities of daily living), routine needs (instrumental activities of daily living), having a job outside the home, walking, remembering, and
other activities. Comparable national data on activity limitation have been available since 1997. Between 1997 and 2002 the percent of working-age adults 18–64 years of age reporting any activity limitation caused by a chronic health condition remained relatively stable. In 2000–2002, 6 percent of younger adults 18–44 years of age reported limitation in activity, in contrast to 21 percent of adults 55–64 years of age. Differences in limitation of activity by poverty status are substantial; the percent of poor working-age adults reporting a limitation was more than three times that of adults with family income at 200 percent or more of the poverty level. After adjusting for differences in age, limitation of activity was about the same for men and women. Limitation of activity varies modestly by race and Hispanic origin from 8 percent of Hispanic persons to 12 percent of non-Hispanic black persons. Health surveys that measure limitation of activity have typically asked about chronic conditions causing these restrictions. Health conditions usually refer to broad categories of disease and impairment rather than medical diagnoses and reflect the understanding the general public has of factors causing disability or limitation of activity. Among working-age adults, arthritis and other musculoskeletal conditions were the most frequently mentioned chronic conditions causing limitation of activity. Among persons 18–44 years of age, mental illness was the second most prevalent cause of activity limitation. Among older working-age adults (45–64 years), heart disease was the second most frequently mentioned condition. Persons who reported more than one chronic health condition as the cause of their activity limitation were counted in each category.

2. FILL IN THE CHART

<table>
<thead>
<tr>
<th>The cause of limitation in everyday activities</th>
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</thead>
<tbody>
<tr>
<td>Personal care needs (activities of daily living)</td>
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</tbody>
</table>

87
Limitation of Activity:

Adults 65 Years of Age and Over

The ability to perform basic activities of daily living (ADL) such as bathing, dressing, and using the toilet, is an indicator of the health and functional well-being of the older population. Being limited in ADLs compromises the quality of life of older persons and often results in the need for informal or formal caregiving services, including institutionalization. The Medicare Current Beneficiary Survey reports the health and health care utilization of a representative sample of Medicare beneficiaries of all ages and in all types of residences, both institutional and noninstitutional. Respondents are asked about their level of difficulty and the kind of assistance received in performing six ADLs: bathing or showering, dressing, eating, getting in or out of bed or chairs, walking, and using the toilet. The definition of limitation here includes persons who have difficulty and who receive help or supervision performing at least one of the six activities. From 1992 to 2002 the percent of all Medicare beneficiaries 65 years of age and over who were limited in at least one of six ADLs declined from 16 percent to 14 percent. During the same period the percent of Medicare beneficiaries 65 years of age and over who were limited in ADLs ranged between 10–12 percent for noninstitutionalized beneficiaries and between 86–93 percent for institutionalized...
beneficiaries. In 2002, 11 percent of noninstitutionalized and 90 percent of institutionalized beneficiaries were limited in at least one of six ADLs. About 5 percent of Medicare beneficiaries 65 years of age and over are institutionalized. Over time, the distinction between noninstitutionalized and institutionalized settings has blurred as “assisted living” facilities have become more prominent. Trends in activity limitation for both noninstitutionalized and institutionalized beneficiaries may be affected by the emergence of assisted living and other types of residential settings for older Americans. Among noninstitutionalized older Medicare beneficiaries, the percent limited in ADLs was higher for women than men and rises with age for both women and men. For the oldest age group, persons 85 years of age and over, 27 percent of women and 24 percent of men received help or supervision with at least one basic activity of daily living in 2002. Among persons in institutions, nearly all, regardless of age, received help or supervision with ADLs (89 percent of men and 90 percent of women). Some studies show that limitations in certain aspects of disability have declined among the older population, including the ability to perform physical tasks such as walking up steps and reaching arms overhead and the ability to perform instrumental activities of daily living (IADLs) such as shopping and managing money. Evidence on the trends in ADL limitation is mixed, but a recent study shows declines in certain measures of ADL limitation beginning in the mid-1990s. More studies over a longer time period are needed to determine whether a sustained overall decline in ADL limitation is occurring.

2. FILL IN THE CHART

<table>
<thead>
<tr>
<th>Basic activities of daily living (ADL)</th>
<th>Additional aspects of disability</th>
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</table>

TASKS 5.6
1. READ THE TEXT

Overweight and Obesity

Epidemiologic and actuarial studies have shown that increased body weight is associated with excess morbidity and mortality. Among adults, overweight and obesity elevate the risk of heart disease, diabetes, and some types of cancer. Overweight and obesity are also factors that increase the severity of disease associated with hypertension, arthritis, and other musculoskeletal problems. Among children and adolescents, obesity increases the risk of high cholesterol, hypertension, and diabetes. Diet, physical activity, genetic factors, and health conditions all contribute to overweight in children and adults. The potential health benefits from reduction in the prevalence of overweight and obesity are of significant public health importance. Results from a series of National Health and Nutrition Examination Surveys indicate that the prevalence of overweight and obesity changed little between the early 1960s and 1976–80. Findings from the 1988–94 and 1999–2002 surveys, however, showed substantial increases in overweight and obesity among adults. The upward trend in overweight since 1980 reflects primarily an increase in the percent of adults 20–74 years of age who are obese. In 1999–2002, 65 percent of adults were overweight with 31 percent obese. The percent of children (6–11 years of age) and adolescents (12–19 years of age) who are overweight has also risen. Among children and adolescents, the percent overweight increased since 1976–80. In 1999–2002 about 16 percent of children and adolescents were overweight. The prevalence of overweight among adolescents varies by race and ethnicity. In 1999–2002, 14 percent of non-Hispanic white adolescents, 21 percent of non-Hispanic black adolescents, and 23 percent of Mexican-origin adolescents were overweight. The prevalence of obesity varies among adults by sex, race, and ethnicity. In 1999–2002, 28 percent of men and 34 percent of women 20–74 years of age were obese. The prevalence of obesity among women differed significantly by racial and ethnic group; non-Hispanic black women had a higher
prevalence of obesity than did non-Hispanic white women. In 1999–2002 one-half of non-Hispanic black women were obese.

2. THE INFORMATION FROM THE TEXT WILL HELP YOU TO FILL IN THE CHART

<table>
<thead>
<tr>
<th>Correlation between overweight and obesity and disease</th>
<th>Measures against overweight and obesity</th>
<th>Results of National Health and nutrition Examination Surveys</th>
<th>Conclusion</th>
</tr>
</thead>
</table>

TASKS 5.7

1. READ THE TEXT AND TRY TO GUESS

1) Why did obesity become the major health issue?

2) What can you say about age group and obesity?
   - newborns
   - children and teens
   - elderly
   - army

2. POINT OUT SOME TAKEN EFFORTS AGAINST OBESITY
Obesity in the United States

Obesity in the United States has been increasingly cited as a major health issue in recent decades. While many industrialized countries have experienced similar increases, obesity rates in the United States are among the highest in the world with as of 2007 74.1% of the adults being overweight or obese.

Estimates of the number of obese American adults have been steadily expanding, from 19.4% in 1997, 24.5% in 2004 to 26.6% in 2007.

The direct medical cost of obesity and indirect economic loss to obesity has been estimated to be as high as $51.64 billion and $99.2 billion in 1995, respectively; this rose to $61 billion and $117 billion in 2000. Researchers for the Centers for Disease Control and Prevention and RTI International estimate that in 2003, obesity-attributable medical expenditures reached $75 billion.

Obesity rates have increased for all population groups in the United States over the last several decades. Between 1986 and 2000, the prevalence of severe obesity (BMI ≥ 40 kg/m²) quadrupled from one in two hundred Americans to one in fifty. Extreme obesity (BMI ≥ 50 kg/m²) in adults increased by a factor of five, from one in two thousand to one in four hundred. There have been similar increases seen in children and adolescents, with the prevalence of overweight in pediatric age groups nearly tripling over the same period. Approximately nine million children over six years of age are considered obese. Several recent studies have shown that the rise in obesity in the US is slowing, possibly explained by saturation of health-oriented media or a biological limit on obesity.

**By Age Group**

Historically, obesity primarily afflicted adults, but this has changed in the last 2 decades. 15-25 percent of American children and adolescents are now obese. Children and adolescents who are obese are likely to be obese in adulthood and to develop obesity-related health problems.
Newborns

Some newborns may be born big but this is more often a problem associated with a medical disorder. Unlike adults, newborns do not develop obesity. The number one cause of big babies is diabetes but this is not considered to be an obese baby.

Children and Teens

It is estimated that close to 25% of children and teenagers are either overweight or obese. The percentage is higher in minorities like Pima Indians, Latinos, Asians and African Americans. This has been attributed in part to sedentary lifestyle and consumption of fast foods.

Childhood Obesity Statistics

From 1980 to 2008, the prevalence of obesity in children aged 6 to 11 years almost tripled from 6.5% to 19.6%. The prevalence of obesity in teenagers more than tripled from 5% to 18.1% in the same time frame.

Data from NHANES surveys (1976–1980 and 2003–2006) show that the prevalence of obesity has increased: for children aged 2–5 years, prevalence increased from 5.0% to 12.4%; for those aged 6–11 years, prevalence increased from 6.5% to 17.0%; and for those aged 12–19 years, prevalence increased from 5.0% to 17.6%.

In 2000, approximately 19% of children (ages 6–11) and 17% of adolescents (ages 12–19) were overweight and an additional 15% of children and adolescents were at risk to becoming overweight, based on their BMI.

Analyses of the trends in high BMI for age showed no statistically significant trend over the four time periods (1999–2000, 2001–2002, 2003–2004, and 2005–2006) for either boys or girls. Overall, in 2003-2006, 11.3% of children and adolescents aged 2 through 19 years were at or above the 97th percentile of the 2000 BMI-for-age growth charts, 16.3% were at or above the 95th percentile, and 31.9% were at or above the 85th percentile
Trend analyses indicate no significant trend between 1999–2000 and 2007-2008 except at the highest BMI cut point (BMI for age 97th percentile) among all 6- through 19-year-old boys. In 2007-2008, 9.5% of infants and toddlers were at or above the 95th percentile of the weight-for-recumbent-length growth charts. Among children and adolescents aged 2 through 19 years, 11.9% were at or above the 97th percentile of the BMI-for-age growth charts; 16.9% were at or above the 95th percentile; and 31.7% were at or above the 85th percentile of BMI for age.

In summary, between 2003 and 2006, 11.3% of children and adolescents were obese and 16.3% were overweight. A slight increase was observed in 2007 and 2008 when the recorded data shows that 11.9% of the children between 6 and 19 years old were obese and 16.9% were overweight. The data recorded in the first survey was obtained by measuring 8,165 children over four years and the second was obtained by measuring 3,281 children.

**Elderly**

Although obesity is reported in the elderly, the numbers are still significantly lower than the levels seen in the young adult population. It is speculated that socioeconomic factors may play a role in this age group when it comes to developing obesity.

**In the Military**

An estimated sixteen percent of active duty U.S. military personnel were obese in 2004, with the cost of remedial bariatric surgery for the military reaching $15 million in 2002. Obesity is currently the largest single cause for the discharge of uniformed personnel.

In 2005, 9 million adults of ages 17 to 24, or 27%, were too overweight to be considered for service in the military.
Epidemiology

According to the NHANES data, the African American and Mexican American between 12 and 19 years old are more likely to be overweight than non-Hispanic White adolescents. The prevalence is 21% for the first, 23% and respectively 14%. Also, in a national survey of American Indian children 5–18 years old, 39 percent were found to be overweight or at risk for overweight.

Looking at the long-term consequences, overweight adolescents have a 70 percent chance of becoming overweight or obese adults, which increases to 80 percent if one or more parent is overweight or obese. In 2000, the total cost of obesity for children and adults in the United States was estimated to be $117 billion ($61 billion in direct medical costs).

Medical Costs

An obese Hawaiian Woman

There has been an increase in obesity-related medical problems, including type II diabetes, hypertension, cardiovascular disease, and disability. In particular, diabetes has become the seventh leading cause of death in the United States, with the U.S. Department of Health and Human Services estimating in 2008 that fifty-seven million adults aged twenty and older were pre-diabetic, 23.6 million diabetic, with 90–95% of the latter being type 2-diabetic. Obesity has also been shown to increase the prevalence of complications during pregnancy and childbirth. Babies born to obese women are almost three times as likely to die within one month of birth and almost twice as likely to be stillborn than babies born to women of normal weight.

Obesity has been cited as a contributing factor to approximately 100,000–400,000 deaths in the United States per year and has increased health care use and expenditures, costing society an estimated $117 billion in direct (preventive, diagnostic, and treatment
services related to weight) and indirect (absenteeism, loss of future earnings due to premature death) costs. This exceeds health-care costs associated with smoking or problem drinking and accounts for 6% to 12% of national health care expenditures in the United States.

The Medicare and Medicaid programs bear about half of this cost. Annual hospital costs for treating obesity-related diseases in children rose threefold, from $35 million to $127 million, in the period from 1979 to 1999, and the inpatient and ambulatory healthcare costs increased drastically by $395 per person per year. These trends in healthcare costs associated with pediatric obesity and its comorbidities are staggering, urging the surgeon general to predict that preventable morbidity and mortality associated with obesity may surpass those associated with cigarette smoking. Furthermore, the probability of childhood obesity persisting into adulthood is estimated to increase from approximately twenty percent at four years of age to approximately eighty percent by adolescence, and it is likely that these obesity comorbidities will persist into adulthood.

Anti-Obesity Efforts

Under pressure from parents and anti-obesity advocates, many school districts moved to ban sodas, junk foods, and candy from vending machines and cafeterias. State legislators in California, for example, passed laws banning the sale of machine-dispensed snacks and drinks in elementary schools in 2003, despite objections by the California-Nevada Soft Drink Association. The state followed more recently with legislation to prohibit their soda sales in high schools starting July 1, 2009, with the shortfall in school revenue to be compensated by an increase in funding for school lunch programs. A similar law passed by the Connecticut General Assembly in June 2005 was vetoed by Governor Jodi Rell, who stated the legislation “undermines the control and responsibility of parents with school-aged children”.

In mid-2006, the American Beverage Association (including Cadbury Schweppes, Coca Cola and PepsiCo) agreed to a voluntary ban on the sale of all high-calorie drinks and all beverages in containers larger than 8, 10 and 12 ounces in elementary, middle and high schools, respectively.

Non-profit organizations such as Health Corps work to educate people on healthy eating and advocate for healthy food choices in an effort to combat obesity.

The American First Lady Michelle Obama is leading an initiative to combat childhood obesity entitled “Let's Move”. Mrs. Obama says she aims to wipe out obesity “in a generation”. Let's Move! Has partnered with other programs.

1. LOOK THROUGH THE TEXT

Michelle Obama's Obesity Fight Takes a Cue from the U.S. Army

FORT JACKSON, S.C. — First lady Michelle Obama said Thursday that the military's push to turn recruits into health-conscious warriors could be a model for making people across the U.S. more focused on fitness and nutrition.

Obama, who has made battling childhood obesity one of her signature causes as first lady, visited the Army's largest training post at Fort Jackson outside Columbia to see what the Army has done, from more rigorous training drills to fat-free milk in its mess halls.

She told Lt. Gen. Mark Hertling, who has worked to overhaul both the soldiers’ diets and exercise programs, that she was fascinated by the project.

A lack of fitness is “not just a health issue but a national security issue”, she said, and the military's health initiatives could be a model for youngsters elsewhere.

“A lot of young people around the country could use the same kind of support”, she said.
Hertling gave the first lady a military-style briefing, accompanied by colorful slides beamed on three large screens hung on the walls that detailed how the nation's obesity problems create problems for the Army.

Kids are spending too much time in front of TV and computer screens, not getting enough exercise and drinking too many sugary soft drinks, Hertling said. He said that makes their bones too fragile for military lifestyles.

New soldiers are given exercises for core body strength and stamina. Obama got to see the green salads, fruit and nuts offered in one of the chow lines at the post and chatted with drill sergeants about the challenges of getting recruits into shape.

The first lady sat with a half-dozen senior trainers, asking them how they dealt with a generation more adept at video games than sports or playground games.

“How are the soldiers reacting to this new training? I'm a mother, and it's all about getting the kids to go outside”, she told Staff. Sgt. Brian Evans, of East St. Louis, Ill.

“It takes a while before they figure it out, that this food, this exercise, actually works”, responded Evans, a 14-year Army veteran who said he'd been deployed seven times to Iraq and four to Afghanistan with Special Operations units. “Hopefully they will take that and adapt it to their lifestyle, so it branches off back to their families”.

Obama echoed that message in her address later in the day to the 1,100 soldiers graduating after 10 weeks of basic training and recognized their effort to choose healthier foods.

“I know these past 10 weeks haven't been easy», she told the soldiers. «But the truth is, you never gave up, you never gave in, you pushed yourself to your limits and beyond”.

To wild cheers, Obama praised the families attending for letting their young men and women serve their country despite the risks.

“We want you to know how proud we are of all that you have achieved. We are grateful to you all”, she said.
Fort Jackson's commander, Maj. Gen. James Milano, said the first lady's visit was a big boost for military families, particularly those who have endured years of deployments and separations.

“It's a huge benefit for us, to have her come here and visit. This is a great day, a chance for her to come and talk directly to Army soldiers and their families”, Milano said.

Also Thursday, Obama appeared on “The Oprah Winfrey Show” to urge Americans to support the struggles of U.S. military families. The first lady said she and Jill Biden, wife of Vice President Joe Biden, plan to launch a campaign in March to support military families.

Three days ago, President Barack Obama announced programs meant to support military families, including initiatives to prevent suicide and homelessness.

“There are things as a nation we can do big and small”, the first lady said during her television appearance. “And it's not a difficult thing to do”.

Fort Jackson trains more than 60,000 soldiers annually, including more than half the Army's female soldiers.

Associated Press writer Caryn Rousseau contributed to this report from Chicago.

2. WHY MICHELLE OBAMA PAYS ATTENTION TO THE SOLDIERS’ HEALTH

Childhood Obesity: Michelle Obama Wants You to Get Serious About It

Late last year, after considerable division and debate, Congress took a baby step forward against childhood obesity. New legislation gives schools more money, so that
that slightly-more-expensive veggie burger might be in reach for schools that have only been able to afford the meaty variety up till now. The legislation also clears some of the junk food out of vending machines.

But as we have seen time and again, conquering childhood obesity will require much more, including fundamental changes in federal policy. If we are going to change the current statistics--one in three children is overweight, one in five has an abnormal cholesterol level, and diabetes rates will soar to unprecedented levels--we have no choice.

The key person in the government's attack on the problem is first lady Michelle Obama, who has set a goal of defeating childhood obesity within a generation. For her to succeed, she will need considerable support, not just from the press, but from the entire federal government.

A look back in time will show what we don't want: In the early 1960s, Lady Bird Johnson took on the issue of beautifying America. She spoke out against litter and unsightly billboards. Subsequent first ladies took on similar campaigns--boosting literacy and opposing drug abuse--all of which mainly served to keep them out of controversy.

Everything changed when Hillary Clinton took on health care reform. Suddenly, the first lady went beyond the softer issues of the past and grabbed a lightning rod for debate and division. Today, with the health of our children at stake, the question is, will childhood obesity be treated as a feel-good issue, or will it be addressed as the threat it really is?

Winning the obesity battle starts with recognizing its causes. As I showed in a recent analysis published in the *American Journal of Clinical Nutrition*, the average American eats 75 pounds more meat and 30 pounds more cheese each year, compared with a century ago. We're eating more sugar and oils, too. Where are we putting it? All around our waistlines. Meat, cheese, and junk food are fueling the childhood obesity epidemic.
Currently, the federal government subsidizes fatty cheese, feed grains for livestock, and sugar, fueling the very problem the first lady hopes to conquer. USDA programs actively support cheese marketing, as shown in the contracts with fast-food chains that PCRM obtained under the Freedom of Information Act and which were publicized in a recent front-page story in the New York Times. So the political question is, do we favor big profits for industries that are making kids sick, or do our priorities favor children themselves?

To confront the threats to America's children, the first lady will need not only vision and strong leadership; she will need the full support of the Administration, Congress and the American public.


TASKS 5.10

1. LOOK THROUGH THE TEXT

Congress Passes Sweeping Child Nutrition Bill

By the CNN Wire Staff

December 2, 2010 - Updated 2052 GMT (0452 HKT)

Washington (CNN) - The House of Representatives passed a sweeping child nutrition bill Thursday designed to promote better eating habits in part by giving the federal government more authority to set standards for food sold in vending machines and other venues on school grounds.

Among other things, the $4.5 billion measure provides more money to poor areas to subsidize free meals and requires schools to abide by health guidelines drafted by the
U.S. Department of Agriculture. To help offset the higher cost of including more fruits and vegetables, the bill increases the reimbursement rate for school lunches.

The bill, which passed 264-157 largely along party lines, has already been approved by the Senate and is a top priority for first lady Michelle Obama. It now advances to the president's desk to be signed into law.

Some Democrats had objected to the fact that the bill is funded in part by stripping $2.2 billion from the federal food stamp program. Congress also voted over the summer to take money from the program to fund legislation sending money to cash-strapped states to avoid teacher layoffs.

The cuts largely negate a spending increase provided to the food stamp program by the 2009 economic stimulus plan. Administration officials reportedly have promised anxious liberals that they will work to find ways to restore the higher funding levels.

The first lady has championed the child nutrition bill as part of her «Let's Move» initiative to combat child obesity in the United States.

2. GIVE THE IDEA OF IT IN RUSSIAN

TASKS 5.11

1. LOOK THROUGH THE TEXT AND TRY TO KNOW:

1) What main problems confront with the subcommittee on education reform, committee on education and workforce used states House of Representatives?
2) What anti-obesity efforts were suggested by Richard H. Carmona in his report?

Testimony
Before the Subcommittee on Education Reform
Committee on Education and the Workforce
United States House of Representatives
Good morning Mr. Chairman and distinguished members of the Subcommittee. My name is Dr. Richard Carmona, and I am the Surgeon General of the United States. As an American, I want to take this opportunity to thank you for your service to our nation. I’ve had the honor of working with many of you during my first 11 months as Surgeon General, and I look forward to strengthening our partnerships to improve the health and well-being of all Americans.

Mr. Chairman, you have been a leader in developing innovative approaches to combat childhood obesity. Thank you for your commitment to the health and well-being of our children. The hearing you have called today will draw further public attention to this growing pediatric health crisis.

As Surgeon General, I welcome this chance to talk with you about a health crisis affecting every state, every city, every community, and every school across our great nation.

The crisis is obesity. It’s the fastest-growing cause of disease and death in America. And it’s completely preventable.

- Nearly two out of every three Americans are overweight or obese.
- One out of every eight deaths in America is caused by an illness directly related to overweight and obesity.
Think of it this way: statistics tell us that of the 20 members serving on this subcommittee, at least two will die because of a completely preventable illness related to overweight or obesity. Because of overweight or obesity, two of you will spend less time serving your communities and enjoying your children and grandchildren.

America’s children are already seeing the initial consequences of a lack of physical activity and unhealthy eating habits. Fortunately, there is still time to reverse this dangerous trend in our children’s lives.

Let’s start with the good news: I am pleased to be able to report that most of America’s children are healthy.

Overall, 82 percent of our nation’s 70 million children are in very good or excellent health. Infant mortality is at an all-time low, childhood immunization is at an all-time high. Our children are less likely to smoke, and less likely to give birth as teenagers.

These are important gains in pediatric health.

But the bad news is that an unprecedented number of children are carrying excess body weight. That excess weight significantly increases our kids’ risk factors for a range of health problems, including diabetes, heart disease, asthma, and emotional and mental health problems.

As a father, I work hard to teach my children about the importance of physical activity and healthy eating. Every parent in this room wants the best for their children.

But the fact is that we have an epidemic of childhood obesity. A study conducted in May by the New York City Department of Health and Mental Hygiene and the Department of Education found that, adjusted to National Standards, nearly one in four of the children in New York City’s public elementary schools is overweight.

Today I will discuss the three key factors that we must address to reduce and eliminate childhood obesity in America. They are:

1. Increased physical activity;
2. Healthier eating habits; and
3. Improved health literacy.
Mr. Chairman, I ask that my statement and the scientific information contained in it be considered as read and made part of the record. In the interest of time, this morning I will present only part of that statement to the subcommittee.

Looking back 40 years to the 1960s, when many of us in this room were children, just over four percent of 6- to 17-year-olds were overweight. Since then, that rate has more than tripled, to over 15 percent. And the problem doesn’t go away when children grow up. Nearly three out of every four overweight teenagers may become overweight adults.

I’m not willing to stand by and let that happen. American children deserve much better than being condemned to a lifetime of serious, costly, and potentially fatal medical complications associated with excess weight. The facts are staggering:

- In the year 2000, the total annual cost of obesity in the United States was $117 billion. While extra value meals may save us some change at the counter, they’re costing us billions of dollars in health care and lost productivity. Physical inactivity and super-sized meals are leading to a nation of oversized people.

- This year, more than 300,000 Americans will die from illnesses related to overweight and obesity.

- Obesity contributes to the number-one cause of death in our nation: heart disease.

- Excess weight has also led to an increase in the number of people suffering from Type 2 diabetes. There are at least 17 million Americans with diabetes, and another 16 million have pre-diabetes. Each year, diabetes costs America $132 billion. It can lead to eye diseases, cardiovascular problems, kidney failure, and early death.

Why are we facing this epidemic of overweight and obesity? Over 50 genes associated with obesity have been located in the human gene map. But the ever-increasing problem of overweight among American children cannot be explained away by changes in genetic composition.

Studies conducted by HHS’ National Institutes of Health and the Centers for Disease Control and Prevention are already yielding important clues about the multiple
factors that contribute to overweight and obesity. Studies are also providing new information about potentially successful interventions.

We know more than ever about the combination of genetic, social, metabolic, and environmental factors that play a role in children’s weight.

But the fundamental reason that our children are overweight is this: Too many children are eating too much and moving too little.

In some cases, solving the problem is as easy as turning off the television and keeping the lid on the cookie jar.

Our children did not create this problem. Adults did. Adults increased the portion size of children’s meals, developed the games and television that children find spellbinding, and chose the sedentary lifestyles that our children emulate. So adults must take the lead in solving this problem.

I’m pleased that businesses like Kraft Foods, Coca Cola, and Nike are supporting major efforts and making significant changes to help kids make healthier choices.

These and other business leaders, foundations, schools and universities across our nation are starting to make a difference in children’s health. I encourage other organizations and every parent in America to join the fight against childhood obesity.

We must teach our children to enjoy healthy foods in healthy portions. As parents, we should never use food as a reward or punishment.

And especially now, during the summer, we need to encourage all children to be physically active for at least 60 minutes a day. Not only sports, but simple things like taking the stairs, riding their bikes, and just getting out and playing.

And as we are getting our kids to make healthy choices, we also need to make them for ourselves. James Baldwin captured the essence of this when he said: «Children have never been good at listening to their elders, but they have never failed to imitate them».

I’ll be the first to say it won’t be easy. My wife and I have four kids. I know first-hand that families live such busy lives that it’s tough to prepare healthy meals and have enough time to get in some physical activity.
But it’s so important, because the choices that children make now, the behaviors they learn now, will last a lifetime.

As adults we must lead by example. Personally, I work out every day. I do my best to make healthy choices in all I do. My bosses President Bush and Secretary Thompson also find time to exercise. In fact, Secretary Thompson put the Department of Health and Human Services on a diet and has led by example by losing over 15 pounds.

President Bush, Secretary Thompson, and I have made disease prevention and health promotion a priority in our roles as leaders. As Surgeon General, prevention comes first in everything I do. Prevention is the vision behind the President’s Healthier US Initiative and the Secretary’s Steps to a Healthier US Initiative.

One of the many challenges is that there are so many more incentives in our current health care system for treatment than for prevention. When I was a practicing physician in a hospital, I made a good living treating people who could have avoided my hospital entirely if they had made better lifestyle choices.

Benjamin Franklin was absolutely right back in the 1700s: an ounce of prevention is worth a pound of cure. But more than 200 years later, prevention is still a radical concept to most Americans.

At the Department of Health and Human Services, we’re encouraging healthy habits more than ever through our work to eliminate health disparities; our many initiatives designed to encourage physical activity, healthy eating, and regular checkups; and our nationwide campaigns to discourage smoking and drug and alcohol abuse.

To help promote healthy lifestyles, I am visiting schools across America in my 50 Schools in 50 States Initiative to talk with kids about avoiding drugs and alcohol, avoiding tobacco in every form, being physically active, eating right, and making healthy choices every day.

Each time I’m out on the road, whether at a school or passing through an airport, I meet young people who are making choices that affect their health and well-being. I believe that what they see and hear in the media can have a profound effect on their choices.
Secretary Thompson also appreciates that, and it’s why he focused the Youth Media Campaign on getting young people excited about increasing the physical activity in their lives and on showing parents that physical activity and healthy eating are essential to their children’s well-being.

This week, the President’s Council on Physical Fitness and Sports will launch a brand-new Presidential Champions Award. The award encourages a lifetime of activities for children and their parents or other role models.

We need initiatives like the Youth Media Campaign and the Presidential Champions Awards because the average American child spends more than four hours every day watching television, playing video games, or surfing the web. We are seeing a generation of kids who grew up off the playground and on the PlayStation.

We must all work together to help our children lead healthy lives. I caution people against playing the “blame game”. Instead of blaming children for being overweight, we need to encourage them and help them to make healthier choices.

We need physical activity and healthy food choices in every school in America. We need better food choices at affordable prices in every neighborhood in America. And we need community planning that includes neighborhood playgrounds and safe walking paths.

Some people want to blame the food industry for our growing waistlines. The reality is that restaurants, including many fast food restaurants, now offer low-fat, healthy choices.

For the meals we eat at home, and the meals we eat out, it’s still our decision what we eat, where we eat, and how much we eat. That concept is part of what I’m talking about with Americans of all ages: increasing our health literacy.

Health literacy is the ability of an individual to access, understand, and use health-related information and services to make appropriate health decisions.

Low health literacy contributes to our nation’s epidemic of overweight and obesity. For example, some mothers are unaware that they can promote their baby’s health
through breastfeeding. Experience with my own patients and students indicate that many Americans don’t understand the impact of caloric intake versus expenditure.

Every morning people wake up and, while they’re sitting at the kitchen table, they read the newspaper and the cereal box. Throughout the day they read the nutritional information on their meals and on their snacks. But do they really understand the information they’re reading?

The labels list grams of fat. But do you know how many grams of fat you should eat in a meal? Or in a day? Or how many is too many? Or too few? These are seemingly simple questions, but we’re not giving Americans simple answers.

Parents are hearing about overweight and obesity. So they’re trying to figure out how much food they should feed their children. How much is too much? How much is not enough? They’re concerned and confused about everything from calories and carbohydrates, to vitamins and portion sizes.

When children are growing and developing, a restrictive diet may not be the best choice for every child. Just as with adults, one diet does not fit every child.

As parents, we know that. But when we see a child gaining weight and not exercising enough, we see the social and psychological pain it causes. When we see a child’s self-esteem drop by the day because she’s left out of schoolyard games, or because he just can’t keep up with the other kids on their bikes, we know that we need to help that child.

I’m pleased to hear from parents and pediatricians that moms and dads are asking about how to establish healthy eating habits for kids.

Parents should always talk to a pediatrician or family physician before putting any child on a diet or beginning any vigorous exercise plan.

The reality is that often, if a child is overweight but still gaining height, the best thing parents can do is maintain the child’s weight. Kids come in all shapes and sizes, and sometimes a child just needs a little more physical activity and a little less food intake. Again, it’s not about blame — it’s about balance.
And to make healthy choices, parents and children need easy-to-understand information that fits into their busy lifestyles. All of us — government, academia, health care professionals, businesses, schools, and communities — need to work together to ensure that straightforward information about healthy eating and physical activity is available.

For example, Secretary Thompson announced last week that food labels will list trans fat content. By putting trans fat information on food labels, we’re giving American families information to make smart choices to lower their intake of these unhealthy fats.

The food pyramid is another great example. It’s probably the most-recognized nutrition guideline tool in America. HHS is looking forward to working with the Department of Agriculture to evaluate and update the food pyramid based on the latest scientific evidence.

I don’t have all the answers today. But we can figure this out together. We can increase health literacy and reduce childhood obesity. Secretary Thompson has been a pioneer in getting prevention into the American mindset. We’re starting to see some results, and we need your help. As members of Congress, as members of your communities, and as parents, you are role models and leaders.

As Surgeon General, I charge you to make healthy personal choices in your own lives, and to set good examples for all the children around you.

And I ask you to work with me to support our efforts to improve Americans’ health literacy, to put prevention first, and to end our nation’s obesity epidemic before it has a chance to reach into another generation of Americans.

Thank you. I would be happy to answer any questions.

TASKS 5.12

1. WHAT DO YOU THINK ABOUT HEALTH RISK FACTORS? DO A PROJECT “HEALTH RISK FACTORS OF MODERN AMERICA”
Some Possible Points to Clear up

1) What are the health risk factors?
2) Why is obesity considered as the major health issue?
3) Speak about the role of the first lady of the US Michelle Obama in the anti-obesity efforts.
4) What role does physical activity play in life expectancy?
5) Speak about your own opinion on the problem of health risk factors.

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

1) Health risk factors (smoking, eating of tasty food etc.). Pro and con.

Unit VI. MEDICINES

TASKS 6.1

1. READ THE TEXT

Asthma Drugs

Asthma is a chronic lung disease that affects breathing. It is characterized by episodes of inflammation and narrowing of small airways in response to "triggers," which include allergens, infections, exercise, or exposure to respiratory irritants, such as tobacco smoke and pollutants. These attacks or episodes may involve shortness of breath, cough, wheezing, chest pain or tightness, mucus production, or a combination of these symptoms. Asthma is a leading cause of childhood illness and a leading cause of disability and health care expenditures for adults. In 2000 alone, over 10 million visits to
private physician offices and hospital outpatient departments, about 2 million visits to hospital emergency departments, and almost half a million hospitalizations with a diagnosis of asthma on the medical record were reported.

The proportion of persons reporting that they had at least one asthma episode or attack during the past 12 months (asthma attack prevalence) has remained fairly stable during 1997 to 2001 (39-43 per 1,000 population). Asthma attack prevalence rates decrease with age, and are higher among non-Hispanic black persons than among either non-Hispanic white or Hispanic persons. Among adults, women have a higher asthma attack prevalence rate than men, while among children under 18 years of age, boys have a 30 percent higher rate than girls Q).

Complications and mortality from the disease are largely preventable with adequate medical care, use of medications, and patient and family education about the disease. Drugs for asthma are categorized into two general classes: quick-relief (rescue) drugs used to treat acute symptoms and attacks, and long-term control drugs (prevention-focused) for achieving and maintaining control of persistent asthma. The types of medicines prescribed for asthma are dictated by the severity of the disease. National Asthma Education and Prevention Program (NAEPP) clinical guidelines issued in 1997, and updated in 2002, recommend some type of daily long-term control drug in addition to quick-relief drugs for persons with all but the least severe type of asthma.

Consistent with NAEPP guidelines, between 1995-96 and 2001-02 utilization of long-term control drugs for asthma increased. Between 1995-96 and 1997-98, for patients with a diagnosis of asthma recorded on the visit record, the percent of visits to physician offices and hospital outpatient departments where a long-term control drug was prescribed, provided, or continued surpassed the percent of asthma visits with a quick-relief drug. In 2001-02, 55 percent of visits for asthma patients had a long-term control drug mentioned, compared with only 39 percent in 1995-96. While both quick-relief and long-term control drugs are indicated by the guidelines, the higher rates of long-acting asthma drugs compared with quick-relief drugs may be in part due to reporting practices during asthma visits. Quick-relief asthma drugs may be underreported
because nonsymptomatic patients may have a rescue drug but are not currently using it and thus fail to report it during the visit. While asthma may be a condition recorded on the medical record it may not be the primary reason for the specific sampled visit, so physicians may not ask about “as-needed” drugs. In addition, since only six drugs were recorded per visit, infrequently used rescue drugs may be more likely to be omitted.

The types of long-term preventive drugs for asthma that are available have been changing. There was a rapid change in prescribing practices following the availability and marketing of new types or classes of long-acting asthma drugs. Specifically there has been a recent rise in prescribing of two classes of drugs—leukasts (leukotriene modifiers) and inhaled corticosteroids—while cromolyns (cromolyn sodium and nedocromil) are rarely mentioned on visit records.

Leukasts include two recently available brand name drugs: Accolate and Singulair. Since the approval by the Food and Drug Administration of Accolate® in February 1998 and Singulair in 1999, recorded use of these drugs in physician office and hospital outpatient visits for asthma patients has increased. By 2001-02 nearly 15 percent of asthma visits had a long-acting leukast drug associated with the visit. Use of leukasts appears to be substituting for the older class of cromolyns, possibly because leukasts are easier to administer. Leukasts are administered in an oral tablet form, while cromolyns are inhaled multiple times per day.

In 2001-02 inhaled corticosteroids were the most commonly prescribed long-term control drug class during physician office and hospital outpatient department visits for asthma patients. The NAEPP considers corticosteroids the most potent and consistently effective long-term control medication for asthma. Inhaled corticosteroids are preferred over oral steroids because they have fewer side-effects than the more systemic oral corticosteroids. NAEPP guidelines state that oral corticosteroids should be used at their lowest effective dose to reduce toxicity.

New asthma drugs continue to become available. Advair*, a combination drug including both an inhaled corticosteroid and a long-acting bronchodilator, entered the market in 2001. Data from other drug databases suggest that it is being increasingly
prescribed and is in part replacing use of other types of long-acting bronchodilators, consistent with the slight decline in their use in recent years shown on. In 2001-02 Advair® was prescribed, ordered, provided, or continued during 16 percent of physician office and hospital outpatient department visits that had an asthma diagnosis recorded on the visit record.

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

а) истинным;
б) ложным;
в) нет в тексте.

1) Drugs for asthma are categorized into two main classes.
2) Asthma attack prevalence in women in higher than that in men.
3) According to NAEP data cromolyns are recommended as more effective and safe drugs among other classes of medications.
4) National Asthma Education and Prevention Program included in its guidelines the information about the last research in the field of asthma.
5) For persons with all but the least severe type of asthma only quick-relief drugs are recommended.

3. УКАЖИТЕ, КАКОМУ ИЗ АБЗАЦЕВ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИДЕЯ

Among new classes of drugs leukastks appear to be substituting for the older class of cromolyns because of their easy administration.

1)
2)
3)
4. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ 1 АБЗАЦА

1) Allergens, infections, exercise or exposure to respiratory irritants such as tobacco smoke and pollutants may cause asthma.
2) Asthma attacks may involve one or a combination of certain symptoms.
3) Asthma is considered to be a leading cause of childhood illness and also a leading cause of disability and health care expenditures for adults.
4) Some inflammation and narrowing of small airways in response to “triggers” are found to be the characteristic features of asthma.

5. ОПРЕДЕЛИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ 7 АБЗАЦА

1) Among corticosteroids inhaled ones are found to be preferred over oral steroids because of their fewer side-effects.
2) Consistent with NAEPP guidelines oral corticosteroids should be used at their lowest effective dose to reduce toxicity.
3) The NAEPP considers corticosteroids the most potent and consistently effective long-term control medication for asthma.
4) It was stated that the most commonly prescribed long-term control drug class during physician office and hospital outpatient department visits were inhaled corticosteroids.

6. ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ
Asthma attack prevalence rates are higher among… .

1) … Americans
2) … hispanic persons
3) … non-Hispanic white persons
4) … non-Hispanic black persons

7. ВЫБЕРИТЕ СООТВЕТСТВУЮЩИЙ ВАРИАНТ

Quick-relief asthma drugs may be underreported because of their… .

1) … episodic use
2) … toxicity
3) … side effects
4) … complex administration

8. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ТЕКСТА

1) National Asthma Education and Prevention Program (NAEPP) clinical guidelines recommend some types of medications, especially new classes of long-acting asthma drugs to reduce complications and mortality from the disease.

2) Both quick-relief drugs and long-term control drugs are used for prevention and treatment of asthma.

3) Data from some drug databases suggest that such combination drug as Advair is being increasingly prescribed and is in part replacing use of other types of long-acting bronchodilators.

4) New asthma drugs continue to become available.

TASKS 6.2
Drugs—both prescription and nonprescription—are becoming a more frequently utilized therapy for reducing morbidity and mortality, and improving the quality of life of Americans. Factors affecting the increase in utilization of medications include the growth of third-party insurance coverage for drugs, the availability of effective new drugs, marketing to physicians and increasingly directly to consumers, and clinical guidelines recommending increased use of medications for conditions such as high cholesterol, high blood pressure, chronic asthma, and diabetes. This increased utilization is reflected in higher expenditures. Between 1995 and 2002 expenditures for prescription drugs grew at a faster rate than expenditures for other types of health care.

The National Health and Nutrition Examination Survey (NHANES) collect data on the prescription drug use of survey participants during in-person household interviews. Between 1988-94 and 1999-2000 NHANES data show that the percent of Americans of all ages who reported using any prescribed medication during the past month increased from 39 to 44 percent (age adjusted). During the same period the percent of persons who reported using three or more drugs in the past month increased from 12 to 17 percent (age adjusted) of the population. Perhaps most striking is the increase in the percent of older persons who reported taking three or more prescribed medications during a one-month period—almost one-half of those 65 and over in 1999-2000—compared with just over one-third in 1988-94.

Prescription drug use is greater among middle-aged and older adults than among younger persons. Prevalence of many chronic conditions and diseases increases with age, as does use of medications designed to help control or prevent complications associated with those conditions. In 1999-2000, about one-quarter of children reported taking at least one prescription medication while more than 60 percent of middle-aged
adults and more than 80 percent of older adults reported taking at least one prescription drug during the past month.

Use of prescription drugs differs by race and ethnicity. Adults of Mexican origin are less likely to report having taken a prescribed medication in the past month than either non-Hispanic black or non-Hispanic white adults. In part this is because use of medications is strongly related to access to medical care and the ability to pay for medications once prescribed. Americans of Mexican descent are less likely to have health insurance, which often covers some prescription drug expenses, than those in other racial and ethnic groups.

Data on drugs associated with medical visits are available from the National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS Outpatient Department Component). These data are abstracted from medical records of physician office and hospital outpatient department visits and include information on the number and type of prescription and nonprescription drugs, immunizations, allergy shots, and anesthetics that were prescribed, ordered, supplied, administered, or continued during the visit.

Data from NAMCS and NHAMCS provide information on overall medication prescribing patterns in addition to documenting the burden and complexity that medication management presents to the health care system and to consumers. Estimates of the percent of visits with drugs recorded on the visit record from NAMCS and NHAMCS complement the population-based data from NHANES. Which provide a snapshot of prescription drugs reported at the time of in-person interviews? Because NAMCS and NHAMCS data include

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

а) истинным;
б) ложным;
в) нет в тексте.
1) Older persons are reported to take three or more prescribed medications during a one-month period.
2) Wide utilization of medications is explained by their low cost.
3) It is determined that prescription drug use is greater among younger persons.
4) Expenditures for prescription drugs are estimated by the American Health Care System.
5) NHANES collects the information on the prescription drug use among the population.

3. УКАЖИТЕ, КАКОМУ ИЗ АБЗАЦЕВ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИДЕЯ:

Utilization of prescription drugs differs by race and ethnicity.

4. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ 1 АБЗАЦА

1) The increase in utilization of medications depends on a great number of factors.
2) The increased overall drug use is reflected in higher expenditures.
3) At present prescription and nonprescription drugs are used frequently in therapy to reduce morbidity and mortality and improve the quality of Americans' life.
4) One of the main factors affecting the increase in utilization of medications is the availability of effective new drugs.

5. ОПРЕДЕЛИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ 2 АБЗАЦА:
1) The number of older persons who reported taking three or more prescribed medications during a one-month period increased greatly in 1999-2000 in comparison with 1988-94.

2) The per cent of persons who reported using three or more drugs in the past month increased from 12 to 17 per cent of the population.

3) NHANES collects data on the prescription drug use of survey participants during in-person household interviews.

4) NHANES data show that between 1988-94 and 1999-2000 the per cent of Americans of all ages who reported using any prescribed medication during the past month increased from 39 to 44 per cent (age adjusted).

6. ЗАКОНЧИТЕ ПРЕДЛОЖЕНИЕ

In comparison with other racial and ethnic groups Americans of Mexipan descent are less likely to have ...

1) ... life insurance
2) …health insurance
3) .. private insurance
4) .. family insurance

7. ВЫБЕРИТЕ ПРАВИЛЬНЫЙ ВARIАНТ

Drug utilization is greater among...

1) .. children
2) .. students
3) .. younger persons
4) .. middle-aged and older adults

8. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ТЕКСТА
1) Overall drug use is determined by some factors.
2) Data from NAMCS and NHAMCS provide information about the increase in utilization of medications among the Americans due to a number of factors.
3) Prescription drug use is greater among middle-aged and older adults than among younger persons.
4) Utilization of medications differs by race and ethnicity.

**TASKS 6.3**

1. READ THE TEXT

Antidepressant Drugs: Adults

Depression and other forms of mental illness are critical public health issues in America today. In 2001-02 more than 1 in 10 noninstitutionalized adult Americans were estimated to have had a major depressive disorder at some point in their lifetime, with 6.6 percent having a major depressive episode during the past 12 months. Nearly three-fourths of individuals reporting a major depressive episode in their lifetime also met the criteria for other mental disorders such as anxiety disorder and substance use disorder. The detrimental effects of depressive symptoms on quality of life and daily functioning have been estimated to equal or exceed those of heart disease and exceed those of diabetes, arthritis, and gastrointestinal disorders. Increased rates of depression and depressive symptoms have been reported for patients with diabetes, chronic pain, gastrointestinal complaints, migraine headaches, cancer, acquired immunodeficiency syndrome, Alzheimer-type dementia, and various neurologic conditions such as Parkinson's disease and stroke.

Prescriptions for antidepressants have been rising. This rise is associated with the introduction of a new class of drugs known as selective serotonin reuptake inhibitors (SSRIs) first marketed in the United States in 1988. SSRIs include the brand names Celexa®, Lexapro®, Luvox®, Paxil, Prozac, and Zoloft®. Because of greater ease of
use, improved safety, and more manageable side effects, SSRIs have been widely adopted by both psychiatrists and primary care physicians as the first-line treatment for depression. SSRIs are approved and marketed for the treatment of mental disorders other than depression including obsessive compulsive disorder, panic disorder, anxiety disorders, and premenstrual dysphoric disorder. The substantial increase in the prescription of antidepressants also suggests widespread "off-label" (other than FDA-approved uses) use for subsyndromal mental health conditions and a variety of physical disorders.

The National Health and Nutrition Examination Survey (NHANES) collect data on the use of prescription drugs during the past month. Between 1988-94 and 1999-2000 the percent of adults in the civilian noninstitutionalized population who reported using an antidepressant during the past month increased from 3 to 7 percent (age adjusted). Use among women rose from 3 to 10 percent and use among men from 2 to 4 percent. During this period antidepressant use among adults in all age groups doubled or tripled. In both time periods, antidepressant use by women was greater than for men and greater for adults 45 years of age and over than for younger adults. In 1999-2000, 13 percent of women 45-64 years of age reported antidepressant use in the past month.

Differences in use of antidepressants (both SSRIs and non-SSRIs) varied considerably by race and ethnicity. In both 1988-94 and 1999-2000 a larger percentage of non-Hispanic white adults reported use of antidepressants than non-Hispanic black and Mexican adults. Between the two time periods, differences in the use of antidepressants by non-Hispanic white and non-Hispanic black and Mexican adults widened. In 1988-94 the percentage of non-Hispanic white adults using antidepressants was about 1.4 times the percentage among non-Hispanic black and Mexican adults. By 1999-2000 use among non-Hispanic white adults was three times that among non-Hispanic black and Mexican adults. Differences in the types of antidepressant used also varied considerably by race and ethnicity. In 1999-2000 nearly two-thirds of non-Hispanic white adults taking antidepressants reported use of an SSRI in contrast to less than one-half of non-Hispanic black and Mexican adults. Limited access to health care,
lower rates of health insurance coverage, and out-of-pocket cost of medical care as well as cultural factors, have been suggested as explanations for the lower percentage of black and Mexican adults reporting use of antidepressants.

Data from the National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Medical Care Survey (NHAMCS-OPD) show that antidepressants rank among the most frequently prescribed drugs for adults treated in physician offices or hospital outpatient clinics. In 2001-02 the average annual number of adult visits with an antidepressant was 57.6 million. Between 1995-96 and 2001-02 the adult antidepressant visit rate (i.e., the number of visits with an antidepressant drug per 100 persons age 18 and over) increased from 17 to 28 per 100 adults. This increase in the antidepressant visit rate reflected the rapid rise in visits with an SSRI prescribed, ordered, or provided. Between 1995-96 and 2001-02 the SSRI visit rate among adults doubled and the fraction of antidepressant visits with an SSRI drug increased from 54 to 65 percent. Throughout the period, a very small percentage (0.3-0.5 percent) of antidepressants visits included both an SSRI and a non-SSRI antidepressant.

Between 1995-96 and 2001-02 the antidepressant visit rate among women was double the rate among men. During this period women also had higher SSRI visit rates. Trends in the SSRI visit rate for men and women show a widening of the difference between men and women since 1995-96. By 2001-02 the SSRI visit rate of 25 per 100 women was 2.4 times the rate for men. The disparity in the antidepressant and SSRI visit rates of men and women exceeded the difference observed between men and women in the overall rate of visits to office-based physicians and hospital outpatient departments.

The rate of visits with an antidepressant increased markedly for adults in all age groups between 1995-96 and 2001-02 data. Throughout the period, the antidepressant visit rate was higher among middle aged and older adults than among younger adults. The SSRI visit rate increased among adults in all age groups with the largest change observed among older adults. The lower occurrence of side effects with SSRIs has contributed to the rapid adoption of these drugs for treatment of late-life depression and other disorders in the older population.
Since the marketing of Prozac, the first SSRI, new formulations of anti-depressants have become available. Studies suggest that an even wider array of effective antidepressants will available in the future for the treatment of depression and other conditions.

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

а) истинным
б) ложным
в) нет в тексте

1) Three-fourth of individuals besides depression also met the criteria of other mental disorders.
2) Because of the lower cost and greater ease of use SSRIs became popular among the population.
3) There are no great differences in the use of antidepressants by non-Hispanic white and non-Hispanic black and Mexican adults.
4) In case when psychotherapy doesn’t help antidepressants are prescribed.
5) It was determined that antidepressant use by women was greater than for men.

3. УКАЖИТЕ, КАКОМУ ИЗ АБЗАЦЕВ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИДЕЯ

Nowadays SSRIs have been widely adopted by psychiatrists and primary care physicians in case of depression and other kinds of mental disorders.
4. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ПЕРВОГО АБЗАЦА

1) In America depression and other forms of mental illnesses are considered to be critical public health issues at present.
2) Most individuals who had a depressive episode in their lifetime also met the criteria for other mental disorders.
3) The effect of depressive symptoms on quality of life and daily functioning is substantial.
4) A great number of patients with diabetes, chronic pain, cancer, AIDS, migraine, headaches, experienced depression and depressive symptoms.

5. ОПРЕДЕЛИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ ТРЕТЬЕГО АБЗАЦА

1) Mexican adults use less antidepressants because of the limited access to healthcare and out-of-pocket cost of medical care.
2) By 1999-2000 use among non-Hispanic while adults was three times than among non-Hispanic black and Mexican adults.
3) Differences in use of antidepressants (both SSRIs and non-SSRIs) varied considerably by race and ethnicity.
4) In 1988-94 the percentage of non-Hispanic white adults using antidepressants was about 1.4 times the percentage among non-Hispanic black and Mexican adults.

6. ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ, ВЫБРАВ ПРАВИЛЬНЫЙ ОТВЕТ

Antidepressants rank among the most frequently prescribed drugs for adults treated in physician offices or hospital out-patients clinics. This information is reported by… .
1) … WHO
2) … NAMCS
3) … NHANES
4) … NAMCS and NHAMCS-OPD

7. ВЫБЕРИТЕ ПРАВИЛЬНЫЙ ВАРИАНТ, ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ

A new class of drugs known as SSRIs was introduced for the treatment of … .

1) … depression
2) … a variety of physical disorders
3) … subsyndromal mental health conditions
4) … depression and other forms of mental illnesses

8. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ТЕКСТА

1) Therapeutic use of a new class of antidepressants (SSRIs) has become widespread among all age groups of the population because of more manageable side effects and improved safety.
2) Differences in use of antidepressants varied considerably by race and ethnicity.
3) A wider array of effective antidepressants will be available in the future for the treatment of depression and other conditions.
4) The increase in the antidepressant visit rate reflected the rapid rise in visits with an SSRI prescribed, ordered or provided.

TASKS 6.4

1. READ THE TEXT
Nonsteroidal anti-inflammatory drugs, known as NSAIDs, are used to control pain and reduce inflammation. Their use is widespread; more than 70 million prescriptions are dispensed and billions of nonprescription pills are purchased annually in the United States. There are two classes of NSAIDs: nonselective COX inhibitors and selective COX-2 inhibitors. The nonselective COX inhibitors or traditional NSAIDs are effective in controlling pain and reducing inflammation, with the most widely used being ibuprofen and naproxen. For this analysis aspirin was not included as a traditional NSAID because of its common use for cardiac conditions. A small but important proportion of patients with prolonged use of traditional NSAIDs may develop gastrointestinal (GI) side effects, such as bleeding and ulcers. Ulcer complications from traditional NSAID use have been estimated to contribute to as many as 103,000 hospitalizations and 16,500 deaths each year.

Since 1999 three new NSAIDs have been introduced—celecoxib (Celebrex); rofecoxib; and valdecoxib (Bextra). These medications, known as COX-2 NSAIDs, are similar in efficacy to traditional NSAIDs but are believed to have a lower incidence of GI side effects. Because of the lower incidence of GI side effects, COX-2 NSAIDs were heralded as a welcome alternative to traditional NSAIDs. As the use of COX-2 NSAIDs has become widespread, however, a clearer profile of the potential side effects has emerged. The evidence for the lower incidence of side effects is mixed and controversial, and evidence continues to be collected as to their benefit relative to their substantially higher cost.

Since the introduction of COX-2 NSAIDs, their use has become widespread. In 2001-02 COX-2 NSAIDs accounted for 51 percent of NSAID visits to physician offices and hospital outpatient departments among adults 18 years of age and over, surpassing traditional NSAIDs (data table for figure 36). This dramatic growth in COX-2 NSAID prescriptions is evident in all adult age groups in 2001-02. For those 18-44 years of age, about one-third of NSAID visits involved a COX-2 NSAID. For those aged 45-64 years,
COX-2 NSAIDs accounted for more than one-half of the NSAID visits. Among those aged 65 years and over, COX-2 NSAIDs accounted for two-thirds of NSAID visits.

The use of all classes of NSAIDs has been increasing. Between 1995-96 and 2001-02 NSAID visits among adults increased from 20 to 27 visits per 100 populations. Historically, women have higher NSAID use than men. In 2001-02 the rate of NSAID use was about 50 percent higher for women than men. Since the introduction of COX-2 NSAIDs, both men and women have increasingly switched to COX-2 from traditional NSAIDs.

The growth in the use of COX-2 NSAIDs is likely due to several factors. Extensive marketing of these new drugs to physicians and consumers may account for some of the increased use. About 80 percent of promotional spending for all drugs is targeted toward physicians. In recent years, spending on direct-to-consumer (DTC) advertising for all drugs tripled, to $2.7 billion in 2001. COX-2 NSAIDs are among the most heavily advertised medications to consumers. It is estimated that almost one-third of consumers discussed a DTC advertisement with their physicians, which supports the evidence that spending on DTC ads is having an impact on the quantity of prescriptions dispensed.

2. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ПЕРВОГО АБЗАЦА

1) Non-steroidal anti-inflammatory drugs are used to control pain and reduce inflammation.
2) There are two classes of NSAIDs.
3) The use of anti-inflammatory drugs is widespread.
4) The nonselective COX inhibitors are effective in controlling pain and reducing inflammation.

3. НАЙДИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ ВТОРОГО АБЗАЦА

1) Evidence for the lower incidence of side effects is mixed and controversial.
2) COX-2 NSAIDs are similar in efficiency to traditional NSAIDs.
3) Because of the lower incidence of GI side effects, COX-2 NSAIDs were heralded as a welcome alternative to traditional NSAIDs.
4) Since 1999 three new NSAIDs have been introduced.

4. ОПРЕДЕЛИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ ПЯТОГО АБЗАЦА

1) About 80 per cent of promotional spending for all drugs is targeted toward physicians.
2) COX-2 NSAIDs are among the most heavily advertised medications to consumers.
3) Extensive marketing of new drugs to physicians and consumers may account for some of the increased use.
4) The growth in the use of COX-2 NSAIDs is likely due to several factors.

5. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:
   а) истинным
   б) ложным
   в) нет в тексте

1) The number of NSAID visits to physician offices and hospital outpatient departments grew substantially.
2) COX-2 NSAIDs are the only drugs to control pain and reduce inflammation.
3) Nowadays the rate of NSAID use is about 40 per cent higher for men than for women.
4) In the USA NSAIDs use is widespread.
5) NSAIDs were developed by the American pharmacologists some years ago.

6. ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ, ВЫБРАВ ПРАВИЛЬНЫЙ ОТВЕТ
Aspirin was not included as a traditional NSAID because of … .

1) … its harm for the organism
2) … its side effects
3) … its use for heart diseases
4) … its use for cardiac conditions

7. ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ СОГЛАСНО СОДЕРЖАНИЮ ТЕКСТА

Some patients with prolonged use of traditional NSAIDs may develop … .

1) heart diseases
2) gastrointestinal troubles
3) hepatic troubles
4) gastrointestinal side effects

8. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ТЕКСТА

1) Two classes of NSAIDs are widespread among the population.
2) The use of all classes of NSAIDs has been increasing.
3) NSAIDs are used to control pain and reduce inflammation.
4) Both classes of NSAIDs are prescribed by physicians.

TASKS 6.5

1. READ THE TEXT

Stimulants and Antidepressant Drugs: School-Age Children
Substantial increases have occurred over the past 15 years in the prescription of psychotropic drugs for the treatment of mental disorders in children. Pediatric use of psychotropic drugs is frequently “off-label,” relying on results from studies of adults due to limited research on the safety and efficacy of these medications in children. Even when the safety and short-term efficacy of psychotropic medications have been established, prescription of these drugs for behavioral and emotional disorders in children has been controversial. For all classes of psychotropic drugs, more extensive information is needed to determine the long-term effects of these medications on the health and development of children.

Attention Deficit Hyperactivity Disorder (ADHD) is a frequently diagnosed behavioral disorder affecting approximately 3 to 7 percent of the school-age population. Children with this disorder experience symptoms related to inattention and hyperactivity-impulsivity, and frequently have significant problems with schoolwork and peer relationships. While a variety of drug and nondrug therapies have been developed to treat children with ADHD, there has been a trend toward more widespread prescription of stimulant drugs. The annual number of visits by school-age children 5-17 years of age to physician offices and hospital outpatient departments with a stimulant drug prescribed, ordered, or provided increased from 2.6 million in 1994-96 to over 5.0 million in 2000-2002. The stimulant visit rate among boys was about 2.5-3 times the visit rate among girls reflecting the higher prevalence of identified ADHD in boys compared with girls.

Depression, an important mood disorder in children, has been estimated to occur in 2 percent of elementary school-aged children and 4 to 8 percent of adolescents. Children with depression are at greater risk for suicide, poor academic outcomes, problems with alcohol and illicit drugs, and troubled relationships with their families and peers. While psychotherapy has been the traditional treatment for childhood depression, an increasing number of children are now being treated with antidepressants. Between 1994-96 and 2000-2002 the annual number of visits by school-age children 5-17 years of age with an antidepressant increased from 1.1 million to 3.1 million. While the antidepressant visit
rate was similar for boys and girls, it was more than twice as high among adolescents as younger school-age children. In 2000-2002 the antidepressant visit rate was 3.4 per 100 children 5-11 years of age and 8.8 per 100 adolescents 12-17 years of age.

Between 1994-96 and 2000-2002 the percentage of visits with one of the newer class of antidepressants, selective serotonin reuptake inhibitors (SSRI), increased markedly from 43 to 67 percent of all antidepressant visits. Given recent concerns about the safety of some SSRIs for the treatment of childhood and adult depression, monitoring trends in the prescription of these antidepressants is critical.

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

а) истинным
б) ложным
в) нет в тексте

1) The number of visits by school-age children to physicians with stimulant drug prescribed increased.
2) To determine the long-term effects of psychotropic drugs more extensive information is needed.
3) The higher prevalence of identified ADHD in girls compared with boys is determined.
4) Psychotherapy is a developed field of medicine in the USA.
5) Among adolescents the antidepressant visit rate was very high.

3. УКАЖИТЕ, КАКОМУ ИЗ АБЗАЦЕВТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИДЕЯ:

The number of children treated by antidepressants has been increasing now.

1)
2) The prescription of psychotropic drugs for the treatment of mental disorders in children has increased.
3) Prescription of psychotropic drugs for children is controversial.
4) The use of psychotropic drugs in children is necessary.
4) More extensive information is needed to determine the long-term effects of all classes of psychotropic drugs on the health and development of children.

5. ОПРЕДЕЛИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ ВТОРОГО АБЗАЦА

1) Along the variety of drug and nondrug therapies the prescription of stimulant drugs has increased.
2) ADHD is a frequently diagnosed behavioral disorder.
3) The stimulant visit rate among boys and girls is similar.
4) Children with ADHD have significant problems with schoolwork and peer relationships.

6. ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ

It is necessary to discuss the safety of some SSRIs for the treatment of … .

1) … ADHD
2) … behavioral and emotional disorders
3) … childhood and adult depression
4) … mental disorders in children

7. ВЫБЕРИТЕ ПРАВИЛЬНЫЙ ВАРИАНТ

Children with depression are at higher risk for … .

1) … poor academic outcomes and troubled relationships with their peers
2) … problems with alcohol and illicit drugs
3) … behavioral and emotional disorders
4) … all individual and social problems

8. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ТЕКСТА

1) As the use of stimulants and antidepressant drugs increases the extensive research on the safety and efficacy of these medications in children is needed.
2) Pediatric use of psychotropic drugs for the treatment of mental disorders in children is necessary.
3) The prescription of psychotropic drugs for behavioral and emotional disorders in children has been controversial.
4) An increasing number of children are now being treated with antidepressants.

TASKS 6.6

1. READ THE TEXT

Cholesterol-Lowering Drugs

Heart disease is the leading cause of death in the United States, accounting for about one-half of all deaths. Elevated serum cholesterol is a major risk factor for heart disease.
National guidelines suggest that the desired serum total cholesterol level is 200 milligrams per deciliter. In the past two decades, public awareness about the importance of measuring and controlling cholesterol levels has grown. In 1999-2002, 17 percent of adults aged 20 and over had high serum cholesterol levels of 240 mg/dL or higher.

Cholesterol levels can be reduced by lifestyle modifications, including eating a diet low in saturated fat, losing excess weight, and increasing physical activity. If such modifications do not reduce cholesterol to acceptable levels, or patients are at elevated risk for cardiovascular disease, then drug therapy is warranted. The National Cholesterol Education Panel appointed by the National Heart, Lung, and Blood Institute, issued new recommendations in 2001, and again in 2004, that increased the number of Americans who are candidates for cholesterol-lowering drugs.

There are four major classes of cholesterol-lowering drugs: statins, bile acid sequestrants, nicotinic acid, and fibrates. Statins are generally considered to be safe and effective in reducing cholesterol levels and coronary heart disease mortality and morbidity. Because they are effective and well tolerated, statins have become the drug class of choice for cholesterol-lowering drug therapy. Statins include the brand names LipitoeiH, Pravachor, Zocor*, and others.

Physician office and hospital outpatient department visits by adults 45 years and over with cholesterol-lowering drugs prescribed, provided, or continued increased from 16 visits per 100 persons in 1995-96 to 44 per 100 persons in 2001-02. Ninety-one percent of visits where cholesterol-lowering drugs were recorded involved statins in 2001-02. Though statins are effective at reducing cholesterol concentrations, some patients do not reach the target cholesterol levels. Recent research has found that the use of statin drugs with additional cholesterol-lowering drugs (combination therapy) can increase the likelihood of attaining target levels. In 2001-02 the visit rate for combination therapy was 1.4 visits per 100 persons aged 45 years and over, a small fraction of the visit rate involving statins (40 visits per 100 persons). It is likely that combination therapy will continue to expand as physicians alter their prescribing patterns based on the recent evidence.
Statin visit rates have grown irrespective of age or gender. For both men and women 45-64 years of age, the statin visit rate increased more than three-fold between 1995-96 and 2001-02. The increase in the statin visit rate was greater for women than men for these working-age adults. In 1995-96 the statin visit rates were similar for men and women 65 years of age and over. For men aged 65 years and over, the statin visits rate increased more than 250 percent over this time period while the increase in the rate for women 65 years of age and over was only 180 percent. By 2001-02 statin visit rates for men in this age group were about 25 percent higher than for women.

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

а) истинным
б) ложным
в) нет в тексте

1) It is found that the desired serum total cholesterol level must be over 200 milligrams per deciliter.
2) The number of Americans who are candidates for cholesterol-lowering drugs has increased.
3) All classes of cholesterol-lowering drugs are safe and effective.
4) Statins are widely used in cholesterol-lowering drug therapy because they are well-tolerated and effective.
5) The research on the action and effect of cholesterol-lowering drugs was conducted by American scientists during the past two decades.

3. УКАЖИТЕ, КАКОМУ ИЗ АБЗАЦЕВ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИДЕЯ:

It is estimated that statin visit rates have grown irrespective of age or gender.

1)
2) According to the data in 1999-2002 great per cent of adults had high serum cholesterol levels.
3) Americans awared the importance of measuring and controlling cholesterol levels.
4) As a major risk factor for heart disease is elevated serum cholesterol it is necessary to measure and control its level.
5) The leading cause of death in the United States is heart disease.

5. ОПРЕДЕЛИТЕ КЛЮЧЕВОЕ ПРЕДЛОЖЕНИЕ ЧЕТВЕРТОГО АБЗАЦА

1) Hospital outpatient department and physician office visits by adults 45 years and over with cholesterol-lowering drugs prescribed increased greatly.
2) Though statins are effective at reducing cholesterol concentrations, some patients do not reach the target cholesterol levels.
3) Combination therapy will continue to expand.
4) Recent research has found that the use of statin drugs with additional cholesterol-lowering drugs (combination therapy) can increase the likelihood of attaining the target cholesterol levels.

6. ЗАВЕРШИТЕ ПРЕДЛОЖЕНИЕ

To reduce cholesterol levels it is necessary … .
1) … to eat a diet low in saturated fat
2) … to increase physical activity
3) … to change lifestyle and use drug therapy
4) … to use drug therapy

7. ВЫБЕРИТЕ СООТВЕТСТВУЮЩИЙ ВАРИАНТ

The most effective and safe drugs in reducing cholesterol levels are … .

1) … nicotinic acid
2) … statins
3) … Zocor
4) … fibrates

8. ОПРЕДЕЛИТЕ ОСНОВНУЮ ИДЕЮ ТЕКСТА

1) Statins have become the drug class of choice for cholesterol-lowering drug therapy.
2) Bile acid sequestrants, nicotinic acid, fibrates and statins are the major classes of cholesterol-lowering drugs.
3) Combination therapy will continue to expand as physicians alter their prescribing patterns based on the recent evidence.
4) Statins used in therapy are considered to be safe and effective in reducing cholesterol levels and coronary heart disease mortality and morbidity.

TASKS 6.7

1. WHAT DO YOU THINK ABOUT PLACE OF DRUGS IN TREATMENT? DO A PROJECT “DRUGS AS A PART OF THERAPY”
Some Possible Points to Clear up

1) Utilization of a new class of drugs in the treatment of asthma conditions.
2) Place of nonsteroidal anti-inflammatory drugs among other medications.
3) Different classes of stimulants and antidepressants used in the treatment of school-age children.
4) Cholesterol-lowering drugs as a part of therapy.

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

1) What are the best things of using drugs in treatment and the things you’d like to change? And why?

Unit VII. PROBLEMS OF MODERN AMERICAN MEDICINE

TASKS 7.1

1. LOOK THROUGH THE TEXT

Mortality, Life Expectancy

Life expectancy is a measure often used to gauge the overall health of a population. As a summary measure of mortality, life expectancy represents the average number of years of life that could be expected if current death rates were to remain constant. Shifts in life expectancy are often used to describe trends in mortality. Life expectancy at birth is strongly influenced by infant and child mortality. Life expectancy later in life reflects death rates at or above a given age and is independent of the effect of mortality at younger ages. During the 20th century, life expectancy at birth increased from 48 to 74
years of age for men and from 51 to almost 80 years of age for women. Improvements in nutrition, housing, hygiene, and medical care contributed to decreases in death rates throughout the lifespan. Prevention and control of infectious diseases had a profound impact on life expectancy in the first half of the 20th century. Life expectancy at age 65 years also increased during the last century. Among men, life expectancy at age 65 years rose from 12 to 16 years and among women from 12 to 19 years of age. In contrast to life expectancy at birth, which increased sharply early in the century, life expectancy at age 65 years improved primarily after 1950. Improved access to health care advances in medicine, healthier lifestyles, and better health before age 65 years are factors underlying decreased death rates among older Americans. While the overall trend in life expectancy for the United States was upward throughout the 20th century, the gain in years of life expectancy for women generally exceeded that for men until the 1970s, widening the gap in life expectancy between men and women. The increasing gap during those years is attributed to increases in male mortality due to ischemic heart disease and lung cancer, both of which increased largely as the result of men's early and widespread adoption of cigarette smoking. After the 1970s the gain in life expectancy for men exceeded that for women and the gender gap in life expectancy began to narrow. Between 1990 and 2001 the total gain in life expectancy for women was 1 year compared with more than 2 years for men, reflecting proportionately greater decreases in heart disease and cancer mortality for men than for women and proportionately larger increases in chronic lower respiratory disease mortality among women. Longer life expectancies at birth in many other developed countries suggest the possibility of improving longevity in the United States. Decreasing death rates of less advantaged groups could raise life expectancy in the United States.

2. FILL IN THE CHART
Features that influence on life expectancy

TASKS 7.2

1. INFORMATION FROM THE TEXT WILL HELP YOU TO SPEAK ABOUT:

1) sudden Infant Death Syndrome (SIDS)
2) infant mortality rate among racial and ethnic group

Infant Mortality

Infant mortality, the risk of death during the first year of life, is related to the underlying health of the mother, public health practices, socioeconomic conditions, and availability and use of appropriate health care for infants and pregnant women. Disorders related to short gestation and low birth-weight, and congenital malformations are the leading causes of death during the first month of life (neonatal mortality). Sudden Infant Death Syndrome (SIDS) and congenital malformations rank as the leading causes of infant deaths after the first month of life (post neonatal mortality) Q).

Between 1950 and 2001 the infant mortality rate declined by almost 77 percent. In 2002 the infant mortality rate increased to 7.0 infant deaths per 1,000 live births up from 6.8 in 2001. This was the first year since 1958 that the rate has not declined or remained unchanged. Based on an analysis of the preliminary data, the rise in infant mortality was attributed to an increase in neonatal infant deaths (infants less than 28 days old). Two-thirds of all infant deaths occur during the neonatal period. Provisional counts of infant deaths for the first 9 months of 2003 suggest an improvement in the infant mortality rate for 2003. However, the provisional data are not stable enough to determine if the
improvement is large enough to bring the rate down to the historically low level reached in 2001.

Declines in infant mortality over the past five decades have been linked to improved access to health care, advances in neonatal medicine, and public health education campaigns such as the “Back to Sleep” campaign to curb fatalities caused by SIDS.

Infant mortality rates have declined for all racial and ethnic groups, but large disparities remain. During 1999-2001 the infant mortality rate was highest for infants of non-Hispanic black mothers. Infant mortality rates were also high among infants of American Indian or Alaska Native mothers, Puerto Rican mothers, and Hawaiian mothers. Infants of mothers of Chinese origin had the lowest infant mortality rates.

TASKS 7.3

1. INFORMATION GAINED FROM THE TEXT WILL HELP YOU TO PROVE THE FOLLOWING STATEMENTS:

1) heading causes of mortality during the last half of 20th century were: heart disease, stroke and unintentional injuries
2) high blood cholesterol, high blood pressure, smoking, dietary factors, socioeconomic status, obesity and physical inactivity are associated with risk factors

Leading Causes of Death for All Ages

In 2002 a total of 2.4 million deaths were reported in the United States. The overall age-adjusted death rate was 42 percent lower in 2002 than it was in 1950. The reduction in overall mortality during the last half of the 20th century was driven mostly by declines in mortality for such leading causes of death as heart disease, stroke, and unintentional injuries.
Throughout the second half of the 20th century, heart disease was the leading cause of death and stroke was the third leading cause. In 2002 the death rate for heart disease was 59 percent lower than the rate in 1950. The death rate for stroke declined 69 percent since 1950. Heart disease and stroke mortality are associated with risk factors such as high blood cholesterol, high blood pressure, smoking, and dietary factors. Other important factors include socioeconomic status, obesity, and physical inactivity. Factors contributing to the decline in heart disease and stroke mortality include better control of risk factors, improved access to early detection, and better treatment and care, including new drugs and expanded uses for existing drugs (!).

Cancer was the second leading cause of death throughout the period. Overall cancer death rates rose between 1960 and 1990 and then reversed direction. Between 1990 and 2002 overall death rates for cancer declined more than 10 percent. In the 1980s cancer death rates for females increased faster and in the 1990s declined more slowly than rates for males, reducing the disparity in cancer death rates. Rates for males were 63 percent higher than rates for females in 1980 and 46 percent higher in 2002. The trend in the overall cancer death rate reflects the trend in the death rate for lung cancer. Since 1970 the death rate for lung cancer for the total population has been higher than the death rate for any other cancer site. Lung cancer is strongly associated with smoking.

Chronic lower respiratory disease (CLRD) was the fourth leading cause of death in 2002. The death rate for CLRD in 2002 was 54 percent higher than the rate in 1980. The upward trajectory for CLRD death rates is a result of steadily increasing death rates for females, which increased more than 150 percent between 1980 and 2002, while death rates for males increased only 7 percent. The increasing trend for females is most noticeable for females’ age 55 years and over. CLRD is strongly associated with smoking.

The fifth leading cause of death in 2002 was unintentional injuries. Death rates for unintentional injuries declined during the period 1950-1992. Since 1992, however, unintentional injury mortality has increased slightly. Despite recent increases, the death
rate for unintentional injuries in 2002 was still 53 percent lower than the rate in 1950. The risk of death due to unintentional injuries is greater for males than females and the risk varies with age. For males’ age 15-64 years in 2002, the risk of death due to unintentional injuries was 2-3 times the risk for females of those ages. For ages under 15 years and 65 years and over, the gender disparity was smaller. The risk of death due to unintentional injuries increased steeply after age 64 years for both males and females.

Although overall unintentional injury mortality has increased slightly since the early 1990s, the trend in motor vehicle-related injury mortality, which accounts for approximately one-half of all unintentional injury mortality, has been generally downward since the 1970s. The decline in death rates for motor vehicle-related injuries is a result of safer vehicles and highways; behavioral changes such as increased use of safety belts, child safety seats, and motorcycle helmets; and decreased drinking and driving.

Death rates increase with age for chronic diseases such as heart disease, cancer, stroke, and chronic lower respiratory diseases, as well as for unintentional injuries. Death rates for black persons exceed those for white persons of the same gender for each of these causes. Socioeconomic factors are strongly associated with risk of death. Adult males and females with a high school education or less had death rates more than twice as high as the rates for those with more than a high school education in 2002.

TASKS 7.4

1. READ THE TEXT “HEALTH CARE CHALLENGES”

2. STATE WHICH OF THE SENTENCES MAY BE CHOSEN AS TITLES TO THE PARTS OF THE TEXT AND PUT THEM IN THE RIGHT ORDER:

1) Acquired Deficiency Syndrome, AIDS
2) Abortion in the USA is performed only when the mother’s life is in danger
3. MAKE UP A PLAN OF THE TEXT.

Health Care Challenges

Although Americans, on the average, are healthier and live longer today than ever before, a number of challenges still confront the medical care system in the United States. While advanced technology can provide artificial hearts or transplanted kidneys to a few at high cost, others still suffer from diseases, such as tuberculosis, that medicine already has “conquered”.

Older Americans are one of the fastest growing segments of the population. About five percent of the elderly population lives in nursing homes. Many suffer from Alzheimer’s disease, an increasingly common ailment that affects the brain, leaving its victims mentally confused and hard to care for. Other patients, who might have died in previous years from strokes and other ills, live on; but they suffer from speech and memory defects, paralysis and other disabilities. As Americans have grown more aware of the specific health needs of the elderly, the field of gerontology, the study of the aging process, has attracted increasing numbers of physicians. Medical research has focused on this health issue as well, notably with the establishment of the federal, government's National Institute on Aging.
The nation's infant mortality rate is also a concern. The number of infants per thousand live births who died before their first birthday remains higher for the United States than for several other industrialized nations. This rate is also higher for blacks and other minorities than for white Americans. Health authorities agree that better nutrition and prenatal (before birth) health care could substantially lower the infant mortality rate among these minority groups.

Delivering better health care to poor and disadvantaged groups in the United States is only one way of improving the nation's overall health. Research in recent years has made it clear that much disease is the result of the way people choose to live. Money spent to persuade people to lose weight, exercise regularly, eat more healthful foods and stop smoking can often provide greater benefits for more people than the most advanced medical technologies. For example, studies have linked a significant drop in the rate of lung cancer to a nationwide decline in cigarette smoking.

Another severe challenge to the health care system is Acquired Immune Deficiency Syndrome, or AIDS.

This worldwide disease, first reported in the United States in 1981, is caused by a virus spread by sexual contact, needle sharing (such as in illegal drug use) or exchange of blood (such as in transfusions). Since 1981 more than 83,000 Americans have died of AIDS. Scientists and pharmaceutical companies are working on vaccines to prevent this disease and medicines to treat it. As of 1991, several drugs had been developed to treat some of the symptoms of AIDS, but not to cure or prevent the disease.

In addition to the grief and pain caused by this disease, it has strained the system because many AIDS patients do not have adequate health insurance. Some are cared for by friends and relatives or at clinics run by churches and other groups. Others are treated in hospitals under the Medicaid program.
1. READ THE TEXT AND CHOOSE AN APPROPRIATE TITLE TO IT FROM THE LIST GIVEN BELOW:

1) Medical Costs
2) The Artificial Heart
3) Medical and Health Care
4) The Physician
5) Health Reform’s Impact on Business and the Economy.

2. CHOOSE THE STATEMENTS WHICH CORRESPOND TO THE CONTENT OF THE ARTICLE:

1) The heart disease treatment is a great achievement for modern medicine.
2) Many medical procedures, even quite routine ones, involve risk.
3) Many American patients claim high standards of medical care due to advances in medical research and treatment of diseases.
4) Physicians, however, are not miracle workers, and the public’s expectations of medical progress sometimes outstrip reality.

In the final decades of the 20th century Americans increasingly view good health as something to which they have a right. They believe they have a right to good health because widespread advances in medical research have made it possible to treat many previously “untreatable” diseases, and because the Constitutional responsibility of the American government to “promote the general Welfare” is far more broadly interpreted today than it has been in the past. These rising expectations regarding health care in the United States are a result of vastly increased medical knowledge; and the belief that in an affluent and democratic society all people should have access to well-trained
physicians, fully equipped hospitals and highly sophisticated procedures for the treatment of disease. While remarkable progress in the field of medicine has satisfied many of these expectations, each new discovery or procedure brings with it new challenges to be overcome and new questions to be answered. One example is the treatment of heart disease.

Treatment of heart disease is one of modern medicine's triumphs. Today surgeons routinely perform heart surgery that would have been extraordinary or even unthinkable just a few years ago. Even heart transplants, though by no means routine, are becoming more common. In 1987, 1,441 were performed in the United States. Transplants, however, pose serious difficulties: a donor heart must become available, blood and tissue must match and the patient's immune system must be suppressed with medication to ensure that the body does not reject the new heart.

TASKS 7.6

1. FIND IN THE TEXT “THE ARTIFICIAL HEART” EQUIVALENTS OF THE SENTENCES GIVEN BELOW:

1) Кларк прожил 112 дней.
2) Один из этих пациентов, однако, прожил почти 2 года и умер в середине 1986 года.
3) Например, обладает ли искусственное сердце теми преимуществами для пациента, которые могут оправдать все страдания, вызванные данной операцией.
4) Однако, оба пациента не выздоровели, перенесли инсульт и другие осложнения.
5) Искусственное сердце - это огромное достижение современной медицины, но оно ставит важные вопросы, которые находятся в центре дебатов по курсу медицинского обслуживания в США.
2. WHICH OF THE ABSTRACTS GIVEN BELOW MAY BE A LOGICAL CONTINUATION OF THE TEXT?

1) HMOs emphasize preventive health care, since the organization loses money rather than gaining fees when it is necessary to prescribe treatment or place someone in the hospital. For this reason, medical experts generally credit HMOs with helping to hold own overall medical costs. In 1987, about 660 HMOs served about 29 million people.

2) The development of the artificial heart represents the kind of dramatic medical advance that Americans have come to expect in recent decades. As medical knowledge has advanced, so has average life expectancy, from 69 years in the 1950s and "60s to 75 years today. Physicians now can treat heart disease and cancer with a variety of drugs or surgical techniques. Drugs are used to control high blood pressure—a risk factor in both strokes and heart attacks. Cardiac pacemakers, or heart regulators, keep many people from dying of abnormalities in the heart rhythm.

The Artificial Heart

In 1982 American physician William C. De Vries undertook a major step beyond transplants when he implanted an artificial heart known as the Jarvik-7 into the chest of a retired dentist, Barney Clark. Clark survived 112 days. Two years later, while working for the Humana Corporation, which owns a chain of private hospitals, Dr. De Vries implanted artificial hearts into two patients, which successfully kept blood pumping steadily through their bodies. However, both patients remained ill suffered strokes, or brain seizures, and other complications. One of these patients, however, survived for nearly two years before dying in mid-1986.

The artificial heart is a great achievement for modern medicine, but it also poses important questions that are at the center of the debate over the course of medical care in the United States. For example, does the artificial heart offer enough benefits to patients to justify the suffering caused by such an operation? What is the quality of life
for an individual who, for the time being, must remain attached to the bulky air compressor which powers the heart?

TASKS 7.7

1. READ THE TEXT “ACHIEVEMENTS AND LIMITS”

Achievements and Limits

The development of the artificial heart represents the kind of dramatic medical advance that Americans have come to expect in recent decades. As medical knowledge has advanced, so has average life expectancy, from 69 years in the 1950s and 60s to 75 years today. Physicians now can treat heart disease and cancer with a variety of drugs or surgical techniques. Individuals whose kidneys have failed can live for years with regular dialysis, or cleansing of their blood, to remove waste products. Drugs are used to control high blood pressure—a risk factor in both strokes and heart attacks. Cardiac pacemakers, or heart regulators, keep many people from dying of abnormalities in the heart rhythm. Surgery, drugs and radiation treatments keep cancer patients alive longer. Childhood leukemia and Hodgkin’s disease no longer carry with them an automatic sentence of death. Surgeons can replace damaged joints with artificial ones, and eye doctors use lasers and other advanced techniques to preserve or restore sight. Advances in microsurgery have even made it possible to reattach limbs which have been detached in accidents, and burn victims benefit from the development of new skin grafting techniques. Among the hundreds of newly developed drugs are tranquilizers, or calming drugs, which have made it possible to release many patients from mental hospitals.

Physicians, however, are not miracle workers, and the public's expectations of medical progress sometimes outstrip reality. About 65 percent of Americans who died in 1988 suffered from cancer, heart disease or other problems of the circulatory system. Modern medicine can treat—but usually not cure—such conditions: There are no
inoculations against cancer or heart disease. Since physicians often cannot predict who will benefit from a treatment, they generally recommend treating every patient who has even a slight chance of benefiting. On the other hand, many medical tests and procedures involve risk, so the value of medical treatment must be weighed against the possibility that the procedure itself may cause disease or injury.

2. FILL IN THE TABLE:

<table>
<thead>
<tr>
<th>Health problem</th>
<th>Treatment</th>
<th>Results and achievements</th>
<th>Full recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney trouble</td>
<td></td>
<td>-</td>
<td>Yes/No</td>
</tr>
<tr>
<td>High blood pressure</td>
<td></td>
<td>-</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Cancer</td>
<td>Heart regulators, cardiac peacemakers</td>
<td>-</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Eyesight trouble</td>
<td>Preserve or restore eyesight</td>
<td>-</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Release many patients from mental hospitals</td>
<td>-</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

3. CHOOSE THE CONCLUSION WHICH SUITES THE TEXT BEST OF ALL:

1) Physicians are not miracle workers.
2) In spite of remarkable progress modern medicine can treat but not cure many diseases today.

3) There have been widespread advances in medicine in recent years that have made it possible to cure many previously “untreatable” diseases.

TASKS 7.8

1. READ THE TEXT

Thyroid Cancer Trends in the USA

As overall cancer rates are declining in the United States, thyroid cancer counters the trend. It's being diagnosed more frequently, especially in women. Women are three times more likely than men to develop thyroid cancer.

The April issue of Mayo Clinic Women's Health Source provides an overview of thyroid cancer, what may be behind some of the increasing numbers, and warning signs of the disease.

The thyroid is the butterfly-shaped gland at the base of the neck, just below the Adam's apple. It produces two hormones that help regulate the heart rate, blood pressure, body temperature and weight.

Cancer occurs when the cells in the thyroid gland change and grow in an uncontrolled fashion, forming a malignant nodule or tumor. Thyroid nodules are common with aging and more than 90 percent are noncancerous. Still, doctors often recommend evaluating nodules to confirm if they are cancerous or benign.

The exact cause of thyroid cancer isn't known. Research has shown that radiation exposure, family history, increasing age and having too much or too little iodine in the diet could increase the risk of this uncommon disease. It's estimated that more than 37,000 people in the United States will be diagnosed with thyroid cancer this year.

Some research indicates that the jump in thyroid cancer diagnoses is due to the increasing used of imaging tests, such as ultrasound, which are spotting small tumors
that may not have been found in the past. However, studies have found that both large and small thyroid tumors are now being found more often, suggesting that advanced imaging technology isn't the only factor contributing to the increasing number of thyroid cancer cases.

Early on, thyroid cancer doesn't cause symptoms. As the cancer grows, symptoms might include:

- A neck lump that can be seen or felt
- Persistent hoarseness, or difficulty speaking in a normal voice
- Enlarged lymph nodes, especially in the neck
- Difficulty swallowing or breathing
- Pain in the throat or neck

While these symptoms can be caused by conditions other than thyroid cancer, they should be pointed out to a physician.

Thyroid cancer, for the most part, is considered one of the least deadly cancers. Surgery to remove all or part of the thyroid is the most common treatment. The death rate has remained low for the most common forms of thyroid cancer even as the number of patients diagnosed climbs.

2. ОТВЕТЬТЕ НА ВОПРОСЫ:

1) What is cancer trend in the USA?
2) What is the function of the thyroid?
3) When does cancer occur?
4) What causes of thyroid cancer do you know?
5) What are the symptoms of thyroid cancer?

3. ЗАПОЛНИТЕ ТАБЛИЦУ:

| functions of the thyroid | causes of thyroid cancer | symptoms of thyroid cancer | treatment of thyroid cancer |
4. УКАЖИТЕ, КАКОЙ ЧАСТИ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИНФОРМАЦИЯ:

Many thyroid nodules are noncancerous.

- 1
- 2
- 3
- 4

5. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

The death rate from thyroid cancer in the USA climbs.

- в тексте нет информации
- истинным
- ложным

6. ОТМЕТЬТЕ ПРАВДИВЫЕ УТВЕРЖДЕНИЯ:

1) У женщин рак щитовидной железы встречается в три раза чаще, чем у мужчин.
2) В прошлом году в США диагноз «рак щитовидной железы» был поставлен 37000 пациентам.
3) Некоторые исследователи считают, что постановка диагноза «рак щитовидной железы» связана с активным использованием в настоящее время ультразвука.
Rectal Cancer Rates Increase in People under 40, Researchers Say

1. Although the numbers are still low, they have been rising steadily for the last 20 years. And scientists have yet to identify a reason.

Rates of rectal cancer in people younger than 40, although low, have been rising steadily for the last 20 years for reasons that are mystifying scientists, researchers said Sunday.

Both colon cancer and rectal cancer are thought to share the same risk factors, but the incidence of colon cancer has remained steady during that period, while the incidence of rectal cancer has grown by an average of 3.8% per year, scientists reported online in the journal Cancer.

“We’ve scoured the literature for a cause and spoken to others in the field and we haven’t identified anything that is able to explain this,” said Dr. Joshua Meyer of the Fox Chase Cancer Center in Philadelphia, the lead author of the study. “It’s a little bit puzzling.”

2. The incidence of rectal cancer has also been growing in older people during the same time period, but that increase is generally attributed to changes in medical guidelines that called for more frequent screening, which would catch more cases of the cancer.

But people under 40 are generally not screened for colorectal cancer unless they have a family history of the disease, so screening does not account for the increase in that group, Meyer said. Colorectal cancer is the second-most-common cause of cancer
death in the United States; rectal cancer accounts for only a relatively small proportion of those deaths.

3. Meyer and his colleagues performed the study while he was at the Weill Cornell Medical Center in New York. The group noticed an increase in rectal cancer among their patients under 40 “and we wanted to see if it was real or a change in referral patterns,” Meyer said.

The team studied data from the government’s Surveillance Epidemiology and End Results cancer registry, which includes about 26% of U.S. cancer cases. They identified 7,661 colon and rectal cancer cases in patients under 40 from 1973 to 2005, then calculated the change in incidence over time.

Overall, the rates in this group were low, as might be expected: 1.11 cases of colon cancer per 200,000 people and 0.42 cases of rectal cancer. But colon cancer incidence remained flat over time, while rectal cancer grew from 1985 onward. The increase was the same for all races and both sexes.

4. The time between the first presentation of symptoms — typically rectal bleeding — and diagnosis averaged seven months, apparently because physicians assumed the bleeding was caused by hemorrhoids and didn’t initially perform more tests.

Other symptoms of rectal cancer include a change in bowel habits, anemia, weight loss and diarrhea.

Risk factors for colorectal cancer include a family history of the disease, obesity, smoking, heavy alcohol use, a diet high in red meat and low in vegetables, and insufficient intake of vitamin D.

The team is not advocating routine screening for rectal cancer in patients under 40 because it would not be cost-effective, but does caution physicians to be more aware of the possibility that bleeding could be caused by cancer in younger people.

The researchers could find no evidence that the increase was linked to anal sex, Meyer added. Anal cancers linked to such sex are typically caused by the human papillomavirus, which is common in the gay community. But HPV generally causes
adenocarcinomas, he said, and the rectal tumors are squamous cell carcinomas and unlikely to be related.

2. ОТВЕТЬТЕ НА ВОПРОСЫ:

1) What is rectal cancer trend in the USA?
2) What is colon cancer trend in the USA?
3) Can scientists identify the cause of rising rates of rectal cancer?
4) What are the symptoms of rectal cancer?
5) What are risk factors to develop cancer?

3. ЗАПОЛНИТЕ ТАБЛИЦУ:

<table>
<thead>
<tr>
<th>trend of colon cancer</th>
<th>trend of rectal cancer</th>
<th>symptoms of rectal cancer</th>
<th>risk factors of colorectal cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. УКАЖИТЕ, КАКОЙ ЧАСТИ ТЕКСТА СООТВЕТСТВУЕТ СЛЕДУЮЩАЯ ИНФОРМАЦИЯ:

Both colon and rectum cancer have the same risk factors.

- 1
- 2
- 3
- 4
5. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ:

The increase of rectal cancer since 1985 is typical only to women.

- в тексте нет информации
- истинным
- ложным

6. ОТМЕТЬТЕ ПРАВДИВЫЕ УТВЕРЖДЕНИЯ:

1) Люди младше 40 лет не обследуются на выявление рака толстой кишки.
2) Недостаточное употребление витамина D может привести к раку прямой кишки.
3) Некоторые из симптомов рака прямой кишки схожи с симптомами геморроя.
4) Ученые уже установили причину увеличения заболеваемости раком прямой кишки.

TASKS 7.10

1. GIVE THE MAIN IDEA OF THE TEXT

2. MAKE UP A PLAN AND RETELL THE TEXT

Stop AIDS

AIDS is the name of a formerly unknown disease now dreaded by people in many countries. Its incidence has been recorded in 40 countries of the Americas, Western Europe, Asia and Africa. AIDS is an acronym for Acquired Immunity Deficiency Syndrome.
3. WHAT IS ITS ORIGIN AND WHAT ARE ITS CONSEQUENCES?

Wild nature which has been responsible in the past for many viral diseases, such as smallpox among others, this time also is believed to have transmitted to us a virus which causes AIDS. Its carriers, researchers in other countries believe, are the so-called green monkeys of Africa in whose organism it is found although they do not succumb to it. No one knows when the virus was transmitted from these wild animals to humans. Diagnostics of the diseases abroad was first developed in 1981 when new methods came into use for assessing the state of immunity. As it gets into human organism the virus affects lymphocytes, blood cells which protect the organism against biological agents: microbes, viruses, etc. In the process the cells die off. When lymphocytes perish, immunity is lost. Any infection, any pathogenic agent usually harmless to the organism, can cause great consequences with a fatal outcome. Scientists think the virus can thrive not just in lymphocytes but in the other cells - of the blood and the brain as well. All data shows that it cannot live in the external medium.

4. DO STATISTICS EXIST WHICH SHOW THE DISEASE’S RATE OF INCIDENCE IN THE WORLD?

According to current data, the number of victims of this disease in the US, for example, is 13 000. Half of these people died. AIDS is special in that it strikes certain categories of people: homosexuals and drug addicts who use contaminated needles for injections of narcotics. It is also found in hemophilia patients who often require blood transfusions. No incidence of AIDS has been reported in this country, but the disease should not be underestimated. In order to fully keep this country free from AIDS efforts are underway to study the problem to develop diagnostic preparations and, what is very important, to provide health services with disposable syringes.
5. FOR HOW LONG CAN THE VIRUS EXIST IN THE HUMAN ORGANISM?

Unlike the flu or respiratory disease, it is not transmitted by droplets dispersed in the air. According to statistics abroad, the incubation period, when a person does not feel affected by it, can last between 6 months to 5 years. Those who have already picked up the disease can live only a few months or perhaps a year or two, before they die. Clinically, the disease has very diverse manifestations in some patients it takes the form of an inflammatory process, like, for example, an inflammation of the subcutaneous tissue, in others it appears as various hemorrhages, or as malignant tumors. As you can see, the disease manifests itself in a wide variety of forms. Unfortunately, as yet, there is no cure for AIDS, while attempts to develop a cure are going on in many countries.

TASKS 7.11

1. READ THE TEXT

Can the Body Control Infection Without Drugs?

Early findings suggest that intensive early treatment may arm the immune system against the AIDS virus

By ERIKA CHECK

THE PATIENT HAD STAYED HOME from work one day three years ago because he thought he had the flu. But as he read a front-page article in a Boston newspaper, he got worried. The article described a flulike syndrome that people develop shortly after contracting HIV. It's often the only symptom an infected person shows until years later, when the immune system falters and the first signs of ADIS appear. So the patient decided to get tested for the virus. The results confirmed his worst fear—he
tested positive—but there was one small consolation. Researchers at Massachusetts General Hospital were investigating a new strategy against HIV. They wanted to know whether treating people intensively during the earliest phase of infection might ultimately enable them to suppress the virus on their own. Most folks are well beyond the flulike “acute phase” of HIV infection before they learn they have a problem. Because this patient acted on his suspicion, he was perfect for the study.

He must be glad he joined. The researchers reported their initial findings in the journal Nature last week, and they're utterly tantalizing. By starting treatment early, and interrupting it for brief periods once they had the virus under control, all of the study's eight participants were able to bolster their immune responses. Indeed, five of the eight have now been off treatment for periods of eight to 11 months—and their infections are still well under, control. The study was small, and the results are preliminary, but, say Dr. Bruce Walker of Mass General's Partners AIDS Research Center, “we now have proof of principle that the immune system can get the upper hand against the virus”. HIV ravages the immune system's so-called T-helper cells. Despite their name, these cells are the generals responsible for mobilizing other parts of the immune system against infection. They put up a good fight at first, creating a large army of "killer" cells (cytotoxic T-lymphocytes) that seek out and destroy cells infected by HIV. But as HIV replicates year after year, the immune system wears down and eventually collapses. Combinations of powerful drugs can handcuff the virus for long periods, but it typically roars back into action as soon as a person stops taking them. Walker's team theorized that starting this powerful regimen early might change the dynamic, enabling infected people to mount a vigorous immune response to HIV without being ground down by it. Instead of a death sentence, they reasoned, the well-controlled infection might function as a sort of vaccine.

To test that hypothesis, the researchers treated all eight patients for periods of 12 to 36 months. Then they abruptly stopped all the anti-HIV drugs and closely monitored the level of viral activity in the patients' blood. Though the patients' “viral loads” shot up quickly, their immune systems responded vigorously. Three saw their HIV counts fall
back to safe levels without further treatment. The other five needed another round of
drugs to let their immune systems regroup, but four of these were able to control the
virus after a second break from medication. At the end of the study, five patients'
immune systems were suppressing the virus without the help of treatment.

No one knows how long they'll stay healthy, of course, but the results are en-
couraging. Some scientists had feared that stopping and restarting drugs might speed the
emergence of resistant strains of the virus, but that concern wasn't borne out “If you
stop all drugs at the same time and let them wash out of the patient's system before the
virus comes back, you don't get resistance”, says Dr. Robert Siliciano of the Johns
Hopkins University School of Medicine. With that concern out of the way, researchers
will now feel freer to study this approach, pursuing longer-term results in larger groups
of patients.

Unfortunately, the new approach is not likely to help people who have been infect-
ed for more than a few months. Past studies suggest they cannot suppress the virus on
their own—and Walker urges them not to try in uncontrolled settings. But if the new
findings are confirmed, people who suspect they've been exposed to HIV will have an
excellent reason to pursue early testing. Just ask the patients who are healthy, active,
and—for now—drug free.

2. MAKE UP A PLAN OF THE TEXT

TASKS 7.12
1. TRANSLATE THE ARTICLE “THE HEPATITIS ANALOGY”
2. MAKE UP A SUMMARY OF THE ARTICLE USING THE FOLLOWING
EXPRESSIONS:

- At the beginning I'd like to note (to stress, to underline the importance of the
problem discussed)
- You can see it from the text (fees, data) that
The main thing is that

It is necessary to compare (underline)

As a matter of feet

It is that problem that should be discussed at present

The Hepatitis Analogy

Epidemiologists often work from analogy. Find a similar epidemic to AIDS and see how it spread. AIDS is not like the Black Death or influenza or tuberculosis or any other disease spread by breath. It is much less contagious. Nor is it like genitals herpes or syphilis or gonorrhea, because it can be spread by other means than sex and is much more dangerous.

The only model that suits AIDS well is hepatitis B, disease that affects 200m. people a year, mostly in the third world. It is much less dangerous, slightly more infectious and much less persistent than AIDS. But it also has significant similarities. It must get into the blood if it is to infect, and it is spread effectively by hypodermic needles and anal intercourse.

A few years ago, Dr Wolf Szmuness of the New York Blood Centre discovered that New York homosexuals had a high risk of catching hepatitis B. Each year, the average New York gay stood a 12% chance of getting the virus. The risk for the population as a whole was 1% during a whole lifetime. This was one of the first signs that promiscuous homosexual intercourse was especially good at spreading certain diseases.

In 1978, the San Francisco health department selected 6,875 volunteers from a group of homosexuals visiting the city clinic for treatment for venereal disease in order to study the spread of hepatitis B among them. The regular samples they gave have now helped in the study of AIDS. By analyzing early from 500 of those 6,875, scientists have documented the growth of AIDS infection from 4.5% in 1978 to 73% in the mid-
1985. It is from these data that the rate at which infected go down with the disease has been estimated.

The study also allows a close inspection of the parallels between AIDS and hepatitis B. Dr. Donald Francis of the Centers for Disease Control has extracted these lessons:

-AIDS is harder to catch. When 8% of the group had the AIDS virus, it was spreading at 7% a year, when 8% had hepatitis B; it was spreading at 25% a year. So AIDS is three to four times less easy to transmit by homosexual contact than is hepatitis B.

-AIDS makes up for lack of infectiousness by being persistent. An AIDS carrier is infectious for life. A hepatitis carrier gets over his infection and is safe.

These two factors are approximately canceled out among the homosexuals studied, with the result that AIDS and hepatitis B spread at about the same rate. But what about heterosexuals? Hepatitis B probably can spread by heterosexual intercourse. Between a quarter and half of women who are regular sexual partners of hepatitis B carriers do get it. And a Japanese study found that 44% of husbands of hepatitis B carriers caught the infection.

Does it mean that AIDS can spread this way as well? Not necessarily. After all, hepatitis B can be passed on by casual contact between family members, though not easily. It is now almost certain that AIDS cannot. But the best guess must be that the same pattern obtains in heterosexual as in homosexual spread: that AIDS is about one-third to one-quarter as easy to pass on as hepatitis B.

The Economist, February 1, 1986

TASKS 7.13

1. WHAT DO YOU THINK ABOUT PROBLEMS OF MODERN AMERICAN MEDICINE? DO A PROJECT “MODERN AMERICA FACES SOME MEDICAL PROBLEMS”
Some Possible Points to Clear up

1) High level of morbidity and mortality from cardio-vascular diseases, cancer etc.
3) The growing number of patients with AIDS
3) Hepatitis in comparison with AIDS
4) Drug addiction

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

1) What is the way out? Your suggestions

Part VIII. INTERNATIONAL COOPERATION IN MEDICINE

TASKS 8.1

1. РАСПОЛОЖИТЕ ЧАСТИ ДЕЛОВОГО ПИСЬМА В ПРАВИЛЬНОМ ПОРЯДКЕ

a)
If you have any questions, please e-mail deansbox@ecfmg.org. Thank you in advance for your assistance.

Sincerely,

Mary B. McAvinue
Manager, Registration and Credentials Services
b)
The Educational Commission for Foreign Medical Graduates (ECFMG®) requests your medical school to provide ECFMG with an updated list of the medical school officials who are authorized to verify medical school diplomas and transcripts and to sign various ECFMG certification forms. ECFMG will use this updated Authorized Signature List for Medical School Officials (the “ASL”) in reviewing current verifications and certifications from your medical school. This updated ASL will replace any previous lists for this purpose.

The ASL must include the Name, Title and Signature of each medical school official authorized to sign the necessary verification/certification documents for ECFMG. Each ASL must also include the official ink seal of the medical school where indicated. ECFMG requests medical schools to use an ink seal, if at all possible, and not a raised or embossed seal, since raised and embossed seals are difficult for us to review and evaluate.

The complete ASL must be sent to ECFMG directly from the medical school.

When evaluating verification/certification documents returned by the medical schools, ECFMG must be able to confirm an exact match of the name, title, signature and seal to the name, title, signature and seal on the ASL. ECFMG will reject any verification or certification if there is a discrepancy in the information on the verification/certification documents that does not match exactly the information on the ASL.

c)

ECFMG

3624 Market Street
EDUCATIONAL COMMISSION FOR FOREIGN MEDICAL GRADUATES Philadelphia PA 19104-2685 USA
215-386-5900 | 215-386-9767 Fax
October 22, 2010

d) It has come to our attention that medical school officials sometimes sign the ASL for Medical School Officials with a formal signature and then sign the verification/certification documents with a variation of their formal signature. For this reason, ECFMG has revised the format of the ASL to allow medical school officials to include additional forms of their signature on the ASL. These signatures may only be used when signing verification/certification documents if an exact match of the signature appears on the ASL. Please see example on attached instructions.

To further assist you with the completion of the enclosed ASL, we have prepared the attached instructions. After you have completed the ASL, please return the original, along with any additional sheets on your medical school's letterhead, directly to ECFMG. Be sure to keep a copy for your records. You should refer to the copy when signing verification/certification documents.

A self-addressed envelope is enclosed for your convenience in replying. Should you send the form by using a courier service, put the self-addressed envelope provided by ECFMG inside the courier's envelope. ECFMG must be able to identify that the ASL is sent from your medical school (i.e. the envelope indicates your medical school's address, seal or stamp; otherwise, the form will not be accepted).

ECFMG® is an organization committed to promoting excellence in international medical education.

e)
Request for an updated Authorized Signature List for Medical School Officials

f)
Dear Sir or Madam:

2. ОПРЕДЕЛИТЕ, К КАКОМУ ВИДУ ДЕЛОВОГО ДОКУМЕНТА ОТНОСИТСЯ ПРЕДСТАВЛЕННОЕ ПИСЬМО

1) Letter of application
2) Contract
3) Memo
4) Letter of complaint
5) Simple commercial letter

TASKS 8.2

1. READ THE TEXT

Cell Symposia Metabolism and Aging

Event Type: Conference
Location: Massachusetts, United States
Registration Deadline: None
Abstract Submission Deadline: Dec 29, 2010

Description of event:
Cell Symposia: Metabolism & Aging
March 27-29, 2011, Cape Cod, Massachusetts, USA

Conference Organizers
Prof. David A. Sinclair, Harvard Medical School, Boston, USA
Dr. Nir Barzilai, M.D., Albert Einstein College of Medicine, New York, USA
Dr. C. Ronald Kahn, Joslin Diabetes Center at Harvard Medical School, Boston, USA

For many decades, aging and metabolism were considered largely separate fields. However, many of the most important discoveries are now occurring at the interface between the two. Interventions including caloric restriction, modulation in insulin and insulin like growth factor 1 (IGF-1), the sirtuin (sirt1) activator resveratrol, and the mammalian target of rapamycin (mTOR) have emerged as “protective” against the metabolic decline of aging, and have been shown to increase life span of several mammalian species. Elucidating how these pathways are interconnected and how they might be safely modulated to treat disease are among the most important challenges facing researchers in the coming decade. This meeting aims to bring together scientists with interests in aging and metabolism to further explore how these fields intersect and to identify the most promising future directions. We will hear the latest data from leaders in the field about the key pathways at the level of the cell and the organ, across a range of contexts including model organisms, mammalian systems, and translational studies in primates and humans. Topics will also include how the signaling networks of metabolism and aging connect and communicate and how we can best make use of these connections to improve medicine and society.

Topic List
- Physiology & aging
- Aging from model organisms to humans
- Cell stress & organelle changes during aging
- Nutritional status and healthspan
2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ

а) истинным
б) ложным
в) нет в тексте

1) Different interventions such as caloric restriction modulation in insulin and insulin like growth factor 1. (IGF1) and against the metabolic decline of aging.
2) The main task facing researchers in the coming decade is to find the ways and means to increase life span.
3) Some years ago aging and metabolism were considered to be closely connected fields.
4) Scientists study the signaling networks of metabolism and aging, their connection and communication to make use of these connections in order to improve medicine and society.
5) International physicians made a lot of discoveries in the fields of aging and metabolism.

TASKS 8.3

1. READ THE TEXT

Keystone Symposia: Hematopoiesis

Mar 27, 2011 – Apr 01, 2011
Event Type: Conference
Location: Montana, United States
Registration Deadline: None
Abstract Submission Deadline: None

_Description of event:_

As a paradigmatic model of developmental and regenerative biology, studies of the hematopoietic system have been critical in establishing fundamental principles in growth factor signaling, transcriptional regulation, organ patterning and stem cell biology. Yet, despite many recent ground-breaking discoveries in this field, the last Keystone Symposium on Hematopoiesis was held nearly 5 years ago, in 2004. Now, with new and emerging knowledge, we are beginning to develop a true molecular understanding of the mechanisms by which blood cells are created and maintained, and how their function may be perturbed in the context of hematopoietic deficiency and malignancy. In addition, sophisticated embryological studies have finally documented the existence of bipotential hemogenic endothelium in developing organisms, and striking technological advances in in vivo imaging and cell identification strategies have provided our first direct visualization of blood cell formation in situ, and indicated the key importance of cell migration and interaction with discrete niches in the direction of cell fate and function. Finally, when turned to the study of blood diseases, these tools have provided unexpected insights into the microenvironmental controls that regulate hematopoietic (dys)function during aging and malignancy. In light of these exciting developments, it is clear that the time has come to again bring together hematopoiesis researchers to facilitate and accelerate the exchange of new knowledge and ideas. Our proposed meeting will include a diverse group of scientists studying hematopoiesis with new technologies and complementary model systems. Speakers will be invited from all career stages, and talks will focus on current findings, emerging opportunities, and immediate challenges within the field. We expect this meeting to serve as a catalyst to develop new ideas and collaborations, and to enhance and encourage the creative and
interactive science that will continue to push forward discoveries in this important area of research.

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ

а) истинным
б) ложным
в) нет в тексте

1) The last Keystone Symposium on Hematopoiesis was held some years ago because there were not any new discoveries in this field.
2) During studies of blood diseases it was found that microenvironmental controls can regulate hematopoetic (dys)function during aging and malignancy.
3) A diverse group of scientists studying hematopoiesis with new technologies and complementary model systems will report about their new discoveries and achievements.
4) Nowadays it is necessary to bring together hematopoiesis researchers to facilitate and accelerate the exchange of new knowledge and ideas.
5) Recently our scientists have conducted an interesting research on hematopoiesis.

TASKS 8.4

1. READ THE TEXT

Keystone Symposia: Molecular Cardiology: Disease Mechanisms and Experimental Therapeutics

Feb 22, 2011 - Feb 27, 2011
Event Type: Conference
Location: Keystone, Colorado, United States
Registration Deadline: None
Abstract Submission Deadline: None

Description of event:
Cardiovascular disease is the major cause of death in the world. Although advances have been made in our understanding of cardiac biology and pathobiology, significant conceptual and practical gaps remain. These two symposia address that gap by focusing on fundamental mechanisms that regulate cardiac structure, function, and repair and how they relate to human disease. The major consideration in the design of these two symposia was integration. Accordingly, each symposium was designed in a very unconventional manner. All six organizers participated in the design of each symposium. Only after all sessions were designed was each “assigned” to one meeting or the other. Consequently, integration exists at multiple levels: the science, the speakers, and hopefully the attendees. With respect to the science, the subject matter of the two symposia is linked at both the fundamental and medical level. The speakers themselves are linked with both symposia by virtue of their scientific interests and conference duties: e.g., some are even speaking in one symposium and moderating in the other. The attendees will be linked to both symposia by virtue of scientific interests and the multiple joint sessions.

Conference Website:
http://www.keystonesymposia.org/11X4

EMAIL THIS MEETING TO A FRIEND!

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ

а) истинным
б) ложным
1) A Russian delegation of cardiologists made several reports about new methods of
treatment used in different clinics and hospitals of the country.
2) The symposia were designed by the head of the World Health Organization.
3) Scientific interests and conference duties are the only things connecting the speakers
of the symposia.
4) In spite of achievements made in the field of cardiac biology and pathobiology,
significant conceptual and practical problems remain.
5) The symposia covered a lot of questions focusing on fundamental mechanisms that
regulate cardiac structure, function and other things.

TASKS 8.5

1. READ THE TEXT

Keystone Symposia: Stem Cells, Cancer and Metastasis

Mar 06, 2011 – Mar 11, 2011
Event Type: Conference
Location: Colorado, United States
Registration Deadline: None
Abstract Submission Deadline: None

Description of event:
Several concepts regarding the origins of cancer and metastasis have converged in
recent years. In particular, special interest has focused on the possibility that tissue
specific stem cells and cancer cells displaying the properties of these cells play
fundamental roles in the malignant process. These concepts have been supported by
studies of mouse models in which predictable patterns of tumor spread and access to
both primary and metastatic lesions has allowed molecular analyses. With regard to primary tumors, emerging evidence suggests that important cancers, including those in the colon and brain, may arise directly from mutated progenitor cells that display deviant differentiation within “stem cell-niches”. Tumors appear also to contain stem-like cancer cells that are both necessary and required to propagate the disease. These findings overlap with observations of metastasis that suggest tumor dissemination may be driven by critical changes in tumor cell differentiation, including epithelial to mesenchymal transition (EMT), and the migration of malignant stem cells to “pre-metastatic niches”. We believe the time is ripe for a joint conference that will bring together scientists and clinicians with interests in stem cell biology, cancer and metastasis. The meeting will provide a forum for exchange of information and insights between these rapidly moving fields. In addition to increasing the sharing of key scientific approaches we believe this conference will galvanize collaborative efforts among disparate research communities to address several key outstanding questions: (i) What is the relationship between normal and malignant tissue stem cells? (ii) What is the relationship between cancer stem cells and the so-called “metastatic precursor”, that is capable of indefinite proliferation at the new metastatic site? (iii) What are the interactions between stromal and stem-like cancer cells in primary and metastatic disease sites? How do these interactions facilitate disease propagation and metastatic spread? (iv) How should we monitor in vivo the biology of stem-like cells in primary tumors and metastasis? (v) What are the optimal approaches to target therapeutically stem-like cancer cells in primary and metastatic disease? By focusing on these questions, we aim to elicit exciting fundamental biological discussions with significant translational application.

Conference Website:
http://www.keystonesymposia.org/meetings/viewMeetings.cfm?MeetingID=1079
EMAIL THIS MEETING TO A FRIEND!
2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ
1) Of particular interest is the fact that the malignant process is conditioned by tissue specific stem cells and cancer cells displaying the properties of these cells.
2) It is estimated that tumors may develop due to stem like cancer cells that are both necessary and required to propagate the disease.
3) Some scientists and clinicians believe that there is no need to spend much time for discussing problems of stem cell biology.
4) Modern investigations showed that new methods of treatment of cancer diseases are more effective than traditional ones.
5) During discussions scientists got the information about interesting cases in cancer research.

TASKS 8.6

1. READ THE TEXT

Keystone Symposia: Environmental Epigenomics and Disease Susceptibility

Mar 27, 2011 - Apr 01, 2011
Event Type: Conference
Location: North Carolina, United States
Registration Deadline: None
Abstract Submission Deadline: None

Description of event:
There are now compelling human epidemiological and animal experimental data that indicate the risk of developing adult-onset complex diseases and neurological disorders are influenced by persistent epigenetic adaptations in response to prenatal and early postnatal exposures to environmental factors. Epigenetics refers to heritable changes in gene function that occur without a change in the sequence of the DNA. The main components of the epigenetic code are DNA methylation, histone modifications, and non-coding RNAs. The epigenetic programs in cells are normally faithfully reproduced during mitosis. Moreover, they can also be maintained during meiosis, resulting in epigenetic transgenerational disease inheritance, and potentially introducing phenotypic variation that is selected for in the evolution of new species. The objective of this conference is to provide evidence that environmental exposures during early development can alter the risk of developing medical conditions, such as asthma, autism, cancer, cardiovascular disease, diabetes, obesity, and schizophrenia later in life by modifying the epigenome. Epigenetic research promises to markedly improve our ability to diagnose, prevent, and treat the pathological conditions of humans; however, it also introduces unique legal and ethical issues. These will also be discussed.

Conference Website:
http://www.keystonesymposia.org/11D3
EMAIL THIS MEETING TO A FRIEND!

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ

а) истинным
б) ложным
в) нет в тексте

1) It was estimated that epigenetics belongs to heritable changes in gene function that occur with a change in the sequence of the DNA.
2) The development of such medical conditions as asthma, cancer, cardiovascular disease and others can be caused by environmental exposures during early development.
3) The epigenetic code contains the following main components: DNA methylation, histone modifications and non-coding RNAs.
4) The improvement of our ability to diagnostics, prevention and treatment of the pathological conditions of humans will depend on the joint efforts of all scientists.
5) Great experimental work was conducted by American scientists who presented their data of the scientific conference.

TASKS 8.7

1. READD THE TEXT

Music Therapy Conference

Event Type: Conference
Location: New York, United States
Registration Deadline: None
Abstract Submission Deadline: Jan 28, 2011

Description of event:
Music therapy — the clinical application of music to treat a wide range of diagnoses using physiological and medical approaches — has advanced dramatically over the past decade, proving to be an effective clinical tool for treating medical diagnoses. Music has been effectively applied to treat Alzheimer’s, dementia, stroke and others, including autism, language acquisition, pain management, stress and anxiety, post-traumatic stress disorder, coma, and more. This landmark multidisciplinary 1-day conference aims at exploring the connection between up-to-date scientific findings and their possible application to clinical music and physiological function, including, not only
neurocognitive mechanisms, but also other physiological processes such as hormonal and metabolic responses, pain control, motor functions, etc. The ultimate goal of this program is fostering dialogue among experts studying music in human adaptive function, physiological sciences, neuroscience, neurology, medical research, psychology, music education, and others disciplines of disease physiology, music physiology, and music therapy. It is expected that the broad and ongoing discussions originating from this symposium, and their dissemination through web-based summary materials will promote collaborative research, and a more effective communication, and translation of scientific research into music-based clinical treatments of disease.

Call for Poster Abstracts
The deadline for abstract submission is January 28, 2011. For complete abstract instructions, please send an e-mail to: musicscience@nyas.org. Type the words “Abstract Information” in the subject line—there is no need to type a message. Instructions will be forwarded automatically. Any questions, please call 212.298.8681.

Conference Website:
EMAIL THIS MEETING TO A FRIEND!

2. ОПРЕДЕЛИТЕ, ЯВЛЯЕТСЯ ЛИ УТВЕРЖДЕНИЕ

а) истинным
б) ложным
в) нет в тексте

1) In some cases only music therapy is effective.
2) Music therapy as an effective clinical tool for treating medical diagnoses was developed five years ago.
3) It is found that music is especially useful in stress and anxiety conditions.
4) It is necessary to foster dialogue among experts studying music in neuroscience, neurology, psychology, music education and other disciplines.  
5) The aim of the conference is to exchange the information about the latest achievements in the field of music therapy.

TASKS 8.8

1. WHAT DO YOU THINK ABOUT INTERNATIONAL COOPERATION IN MEDICINE? DO A PROJECT “INTERNATIONAL COOPERATION IN MEDICINE CAN HELP TO FIND THE WAY OUT”

   Some Possible Points to Clear up

   1) Ways and means to solve international health problems
   2) The exchange of views and opinions
   3) The development of international scientific cooperation
   4) The main fields of international cooperation in medicine

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND DRAWINGS

3. DISCUSS THE PROJECT IN YOUR GROUP

   1) What are the best things of international cooperation in medicine and the things you’d like to change? And why? Your suggestions

Unit IX. APPENDIX

APPENDIX 1

TASKS 9.1 NOBEL LAUREATES
Tasks 9.1.1

1. Read the text and try to:

2. Answer the questions:

1) What achievements have made Robert Edwards to be famous around the world?
2) When was the world’s first “test tube baby” born?
3) Why did the research of Robert Edwards become the topic of lively ethical debate?
4) What new field of medicine was founded by Robert Edwards?

3. Prove the statement and fill in the chart:

<table>
<thead>
<tr>
<th>Infertility was a medical and psychological problem</th>
<th>Infertility is not a medical and psychological problem (today)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. How did Steptoe help Edwards in his scientific work?

5. How do you consider this text and why? (informative or not)

Press Release

2010-10-04

The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine 2010 to Robert G. Edwards for the development of in vitro fertilization
Summary

Robert Edwards is awarded the 2010 Nobel Prize for the development of human in vitro fertilization (IVF) therapy. His achievements have made it possible to treat infertility, a medical condition afflicting a large proportion of humanity including more than 10% of all couples worldwide.

As early as the 1950s, Edwards had the vision that IVF could be useful as a treatment for infertility. He worked systematically to realize his goal, discovered important principles for human fertilization, and succeeded in accomplishing fertilization of human egg cells in test tubes (or more precisely, cell culture dishes). His efforts were finally crowned by success on 25 July, 1978, when the world's first “test tube baby” was born. During the following years, Edwards and his co-workers refined IVF technology and shared it with colleagues around the world.

Approximately four million individuals have so far been born following IVF. Many of them are now adult and some have already become parents. A new field of medicine has emerged, with Robert Edwards leading the process all the way from the fundamental discoveries to the current, successful IVF therapy. His contributions represent a milestone in the development of modern medicine.

Infertility – a medical and psychological problem

More than 10% of all couples worldwide are infertile. For many of them, this is a great disappointment and for some causes lifelong psychological trauma. Medicine has had limited opportunities to help these individuals in the past. Today, the situation is entirely different. In vitro fertilization (IVF) is an established therapy when sperm and egg cannot meet inside the body.

Basic research bears fruit

The British scientist Robert Edwards began his fundamental research on the biology of fertilization in the 1950s. He soon realized that fertilization outside the body could represent a possible treatment of infertility. Other scientists had shown that egg cells from rabbits could be fertilized in test tubes when sperm was added, giving rise to
offspring. Edwards decided to investigate if similar methods could be used to fertilize human egg cells.

It turned out that human eggs have an entirely different life cycle than those of rabbits. In a series of experimental studies conducted together with several different co-workers, Edwards made a number of fundamental discoveries. He clarified how human eggs mature, how different hormones regulate their maturation, and at which time point the eggs are susceptible to the fertilizing sperm. He also determined the conditions under which sperm is activated and has the capacity to fertilize the egg. In 1969, his efforts met with success when, for the first time, a human egg was fertilized in a test tube.

In spite of this success, a major problem remained. The fertilized egg did not develop beyond a single cell division. Edwards suspected that eggs that had matured in the ovaries before they were removed for IVF would function better, and looked for possible ways to obtain such eggs in a safe way.

From experiment to clinical medicine

Edwards contacted the gynecologist Patrick Steptoe. He became the clinician who, together with Edwards, developed IVF from experiment to practical medicine. Steptoe was one of the pioneers in laparoscopy, a technique that was new and controversial at the time. It allows inspection of the ovaries through an optical instrument. Steptoe used the laparoscope to remove eggs from the ovaries and Edwards put the eggs in cell culture and added sperm. The fertilized egg cells now divided several times and formed early embryos, 8 cells in size (see figure).

These early studies were promising but the Medical Research Council decided not to fund a continuation of the project. However, a private donation allowed the work to continue. The research also became the topic of a lively ethical debate that was initiated by Edwards himself. Several religious leaders, ethicists, and scientists demanded that the project be stopped, while others gave it their support.

The birth of Louise Brown - a historic event
Edwards and Steptoe could continue their research thanks to the new donation. By analyzing the patients' hormone levels, they could determine the best time point for fertilization and maximize the chances for success. In 1977, Lesley and John Brown came to the clinic after nine years of failed attempts to have a child. IVF treatment was carried out, and when the fertilized egg had developed into an embryo with 8 cells, it was returned to Mrs. Brown. A healthy baby, Louise Brown, was born through Caesarian section after a full-term pregnancy, on 25 July, 1978. IVF had moved from vision to reality and a new era in medicine had begun.

**IVF is refined and spreads around the world**

Edwards and Steptoe established the Bourn Hall Clinic in Cambridge, the world's first centre for IVF therapy. Steptoe was its medical director until his death in 1988, and Edwards was its head of research until his retirement. Gynecologists and cell biologists from all around the world trained at Bourn Hall, where the methods of IVF were continuously refined. By 1986, 1,000 children had already been born following IVF at Bourn Hall, representing approximately half of all children born after IVF in the world at that time.

Today, IVF is an established therapy throughout the world. It has undergone several important improvements. For example, single sperm can be microinjected directly into the egg cell in the culture dish. This method has improved the treatment of male infertility by IVF. Furthermore, mature eggs suitable for IVF can be identified by ultrasound and removed with a fine syringe rather than through the laparoscope.

IVF is a safe and effective therapy. 20-30% of fertilized eggs lead to the birth of a child. Complications include premature births but are very rare, particularly when one egg only is inserted into the mother. Long-term follow-up studies have shown that IVF children are as healthy as other children.

Approximately four million individuals have been born thanks to IVF. Louise Brown and several other IVF children have given birth to children themselves; this is probably the best evidence for the safety and success of IVF therapy. Today, Robert Edwards' vision is a reality and brings joy to infertile people all over the world.
Robert G. Edwards was born in 1925 in Batley, England. After military service in the Second World War, he studied biology at the University of Wales in Bangor and at Edinburgh University in Scotland, where he received his PhD in 1955 with a Thesis on embryonal development in mice. He became a staff scientist at the National Institute for Medical Research in London in 1958 and initiated his research on the human fertilization process. From 1963, Edwards worked in Cambridge, first at its university and later at Bourn Hall Clinic, the world's first IVF centre, which he founded together with Patrick Steptoe. Edwards was its research director for many years and he was also the editor of several leading scientific journals in the area of fertilization. Robert Edwards is currently professor emeritus at the University of Cambridge.

TASKS 9.1.2

1. READ THE TEXT AND TRY TO FILL IN THE CHARTS:

<table>
<thead>
<tr>
<th>Name two main problems that were solved by Nobel laureates</th>
<th>1)</th>
<th>2)</th>
</tr>
</thead>
</table>

2. INAME SCIENTIFIC CONTRIBUTION OF EACH NOBEL LAUREATE INTO THE DISCOVERY:

| Elizabeth H. Blackburn | Carol W. Yreider | Jack W. Szostak |
The Nobel Assembly at Karolinska Institutet has today decided to award the Nobel Prize in Physiology or Medicine 2009 jointly to Elizabeth H. Blackburn, Carol W. Greider and Jack W. Szostak for the discovery of "how chromosomes are protected by telomeres and the enzyme telomerase”.

Summary

This year's Nobel Prize in Physiology or Medicine is awarded to three scientists who have solved a major problem in biology: how the chromosomes can be copied in a complete way during cell divisions and how they are protected against degradation. The Nobel Laureates have shown that the solution is to be found in the ends of the chromosomes – the telomeres – and in an enzyme that forms them – telomerase.

The long, thread-like DNA molecules that carry our genes are packed into chromosomes, the telomeres being the caps on their ends. Elizabeth Blackburn and Jack Szostak discovered that a unique DNA sequence in the telomeres protects the chromosomes from degradation. Carol Greider and Elizabeth Blackburn identified telomerase, the enzyme that makes telomere DNA. These discoveries explained how the ends of the chromosomes are protected by the telomeres and that they are built by telomerase.
If the telomeres are shortened, cells age. Conversely, if telomerase activity is high, telomere length is maintained, and cellular senescence is delayed. This is the case in cancer cells, which can be considered to have eternal life. Certain inherited diseases, in contrast, are characterized by a defective telomerase, resulting in damaged cells. The award of the Nobel Prize recognizes the discovery of a fundamental mechanism in the cell, a discovery that has stimulated the development of new therapeutic strategies.

The mysterious telomere

The chromosomes contain our genome in their DNA molecules. As early as the 1930s, Hermann Muller (Nobel Prize 1946) and Barbara McClintock (Nobel Prize 1983) had observed that the structures at the ends of the chromosomes, the so-called telomeres, seemed to prevent the chromosomes from attaching to each other. They suspected that the telomeres could have a protective role, but how they operate remained an enigma.

When scientists began to understand how genes are copied, in the 1950s, another problem presented itself. When a cell is about to divide, the DNA molecules, which contain the four bases that form the genetic code, are copied, base by base, by DNA polymerase enzymes. However, for one of the two DNA strands, a problem exists in that the very end of the strand cannot be copied. Therefore, the chromosomes should be shortened every time a cell divides – but in fact that is not usually the case (Fig 1).

Both these problems were solved when this year's Nobel Laureates discovered how the telomere functions and found the enzyme that copies it.

Telomere DNA protects the chromosomes

In the early phase of her research career, Elizabeth Blackburn mapped DNA sequences. When studying the chromosomes of *Tetrahymena*, a unicellular ciliate organism, she identified a DNA sequence that was repeated several times at the ends of the chromosomes. The function of this sequence, CCCCAA, was unclear. At the same
time, Jack Szostak had made the observation that a linear DNA molecule, a type of minichromosome, is rapidly degraded when introduced into yeast cells.

Blackburn presented her results at a conference in 1980. They caught Jack Szostak's interest and he and Blackburn decided to perform an experiment that would cross the boundaries between very distant species (Fig 2). From the DNA of Tetrahymena, Blackburn isolated the CCCCAA sequence. Szostak coupled it to the minichromosomes and put them back into yeast cells. The results, which were published in 1982, were striking – the telomere DNA sequence protected the minichromosomes from degradation. As telomere DNA from one organism, Tetrahymena, protected chromosomes in an entirely different one, yeast, this demonstrated the existence of a previously unrecognized fundamental mechanism. Later on, it became evident that telomere DNA with its characteristic sequence is present in most plants and animals, from amoeba to man.

An enzyme that builds telomeres

Carol Greider, then a graduate student, and her supervisor Blackburn started to investigate if the formation of telomere DNA could be due to an unknown enzyme. On Christmas Day, 1984, Greider discovered signs of enzymatic activity in a cell extract. Greider and Blackburn named the enzyme telomerase, purified it, and showed that it consists of RNA as well as protein (Fig 3). The RNA component turned out to contain the CCCCAA sequence. It serves as the template when the telomere is built, while the protein component is required for the construction work, i.e. the enzymatic activity. Telomerase extends telomere DNA, providing a platform that enables DNA polymerases to copy the entire length of the chromosome without missing the very end portion.

Telomeres delay ageing of the cell

Scientists now began to investigate what roles the telomere might play in the cell. Szostak's group identified yeast cells with mutations that led to a gradual shortening of
the telomeres. Such cells grew poorly and eventually stopped dividing. Blackburn and her co-workers made mutations in the RNA of the telomerase and observed similar effects in *Tetrahymena*. In both cases, this led to premature cellular ageing – senescence. In contrast, functional telomeres instead prevent chromosomal damage and delay cellular senescence. Later on, Greider's group showed that the senescence of human cells is also delayed by telomerase. Research in this area has been intense and it is now known that the DNA sequence in the telomere attracts proteins that form a protective cap around the fragile ends of the DNA strands.

An important piece in the puzzle – human ageing, cancer, and stem cells

These discoveries had a major impact within the scientific community. Many scientists speculated that telomere shortening could be the reason for ageing, not only in the individual cells but also in the organism as a whole. But the ageing process has turned out to be complex and it is now thought to depend on several different factors, the telomere being one of them. Research in this area remains intense.

Most normal cells do not divide frequently, therefore their chromosomes are not at risk of shortening and they do not require high telomerase activity. In contrast, cancer cells have the ability to divide infinitely and yet preserve their telomeres. How do they escape cellular senescence? One explanation became apparent with the finding that cancer cells often have increased telomerase activity. It was therefore proposed that cancer might be treated by eradicating telomerase. Several studies are underway in this area, including clinical trials evaluating vaccines directed against cells with elevated telomerase activity.

Some inherited diseases are now known to be caused by telomerase defects, including certain forms of congenital aplastic anemia, in which insufficient cell divisions in the stem cells of the bone marrow lead to severe anemia. Certain inherited diseases of the skin and the lungs are also caused by telomerase defects.

In conclusion, the discoveries by Blackburn, Greider and Szostak have added a new dimension to our understanding of the cell, shed light on disease mechanisms, and stimulated the development of potential new therapies.
Elizabeth H. Blackburn has US and Australian citizenship. She was born in 1948 in Hobart, Tasmania, Australia. After undergraduate studies at the University of Melbourne, she received her PhD in 1975 from the University of Cambridge, England, and was a postdoctoral researcher at Yale University, New Haven, USA. She was on the faculty at the University of California, Berkeley, and since 1990 has been professor of biology and physiology at the University of California, San Francisco.

Carol W. Greider is a US citizen and was born in 1961 in San Diego, California, USA. She studied at the University of California in Santa Barbara and in Berkeley, where she obtained her PhD in 1987 with Blackburn as her supervisor. After postdoctoral research at Cold Spring Harbor Laboratory, she was appointed professor in the department of molecular biology and genetics at Johns Hopkins University School of Medicine in Baltimore in 1997.

Jack W. Szostak is a US citizen. He was born in 1952 in London, UK and grew up in Canada. He studied at McGill University in Montreal and at Cornell University in Ithaca, New York, where he received his PhD in 1977. He has been at Harvard Medical School since 1979 and is currently professor of genetics at Massachusetts General Hospital in Boston. He is also affiliated with the Howard Hughes Medical Institute.

TASKS 9.1.3

1. READ THE TEXT AND POINT OUT THE ABSTRACT ABOUT THE GENE TARGETING WHICH IS USED TO STUDY HEALTH AND DISEASE

Press Release

8 October 2007

The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2007 jointly to Mario R. Capecchi, Martin J. Evans and Oliver Smithies for their discoveries of “principles for introducing specific gene modifications in mice by the use of embryonic stem cells”
A) **Summary**

This year's Nobel Laureates have made a series of ground-breaking discoveries concerning embryonic stem cells and DNA recombination in mammals. Their discoveries led to the creation of an immensely powerful technology referred to as *gene targeting in mice*. It is now being applied to virtually all areas of biomedicine – from basic research to the development of new therapies.

Gene targeting is often used to inactivate single genes. Such gene “knockout” experiments have elucidated the roles of numerous genes in embryonic development, adult physiology, aging and disease. To date, more than ten thousand mouse genes (approximately half of the genes in the mammalian genome) have been knocked out. Ongoing international efforts will make “knockout mice” for all genes available within the near future.

With gene targeting it is now possible to produce almost any type of DNA modification in the mouse genome, allowing scientists to establish the roles of individual genes in health and disease. Gene targeting has already produced more than five hundred different mouse models of human disorders, including cardiovascular and neuro-degenerative diseases, diabetes and cancer.

Modification of genes by homologous recombination

Information about the development and function of our bodies throughout life is carried within the DNA. Our DNA is packaged in chromosomes, which occur in pairs – one inherited from the father and one from the mother. Exchange of DNA sequences within such chromosome pairs increases genetic variation in the population and occurs by a process called *homologous recombination*. This process is conserved throughout evolution and was demonstrated in bacteria more than 50 years ago by the 1958 Nobel Laureate Joshua Lederberg.
B) Mario Capecchi and Oliver Smithies both had the vision that homologous recombination could be used to specifically modify genes in mammalian cells and they worked consistently towards this goal.

Capecchi demonstrated that homologous recombination could take place between introduced DNA and the chromosomes in mammalian cells. He showed that defective genes could be repaired by homologous recombination with the incoming DNA. Smithies initially tried to repair mutated genes in human cells. He thought that certain inherited blood diseases could be treated by correcting the disease-causing mutations in bone marrow stem cells. In these attempts Smithies discovered that endogenous genes could be targeted irrespective of their activity. This suggested that all genes may be accessible to modification by homologous recombination.

Embryonic stem cells – vehicles to the mouse germ line

The cell types initially studied by Capecchi and Smithies could not be used to create gene-targeted animals. This required another type of cell, one which could give rise to germ cells. Only then could the DNA modifications be inherited.

C) Martin Evans had worked with mouse embryonal carcinoma (EC) cells, which although they came from tumors could give rise to almost any cell type. He had the vision to use EC cells as vehicles to introduce genetic material into the mouse germ line. His attempts were initially unsuccessful because EC cells carried abnormal chromosomes and could not therefore contribute to germ cell formation. Looking for alternatives Evans discovered that chromosomally normal cell cultures could be established directly from early mouse embryos. These cells are now referred to as embryonic stem (ES) cells.

The next step was to show that ES cells could contribute to the germ line (see Figure). Embryos from one mouse strain were injected with ES cells from another mouse strain. These mosaic embryos (i.e. composed of cells from both strains) were then carried to term by surrogate mothers. The mosaic offspring was subsequently
mated, and the presence of ES cell-derived genes detected in the pups. These genes would now be inherited according to Mendel’s laws.

Evans now began to modify the ES cells genetically and for this purpose chose retroviruses, which integrate their genes into the chromosomes. He demonstrated transfer of such retroviral DNA from ES cells, through mosaic mice, into the mouse germ line. Evans had used the ES cells to generate mice that carried new genetic material.

Two ideas come together – homologous recombination in ES cells

D) By 1986 all the pieces were at hand to begin generating the first gene targeted ES cells. Capecchi and Smithies had demonstrated that genes could be targeted by homologous recombination in cultured cells, and Evans had contributed the necessary vehicle to the mouse germ line – the ES-cells. The next step was to combine the two.

For their initial experiments both Smithies and Capecchi chose a gene (hprt) that was easily identified. This gene is involved in a rare inherited human disease (Lesch-Nyhan syndrome). Capecchi refined the strategies for targeting genes and developed a new method (positive-negative selection, see Figure) that could be generally applied.

Birth of the knockout mouse – the beginning of a new era in genetics

The first reports in which homologous recombination in ES cells was used to generate gene-targeted mice were published in 1989. Since then, the number of reported knockout mouse strains has risen exponentially. Gene targeting has developed into a highly versatile technology. It is now possible to introduce mutations that can be activated at specific time points, or in specific cells or organs, both during development and in the adult animal.

E) Gene targeting is used to study health and disease
Almost every aspect of mammalian physiology can be studied by gene targeting. We have consequently witnessed an explosion of research activities applying the technology. Gene targeting has now been used by so many research groups and in so many contexts that it is impossible to make a brief summary of the results. Some of the later contributions of this year's Nobel Laureates are presented below.

Gene targeting has helped us understand the roles of many hundreds of genes in mammalian fetal development. Capecchi's research has uncovered the roles of genes involved in mammalian organ development and in the establishment of the body plan. His work has shed light on the causes of several human inborn malformations.

Evans applied gene targeting to develop mouse models for human diseases. He developed several models for the inherited human disease cystic fibrosis and has used these models to study disease mechanisms and to test the effects of gene therapy.

Smithies also used gene targeting to develop mouse models for inherited diseases such as cystic fibrosis and the blood disease thalassemia. He has also developed numerous mouse models for common human diseases such as hypertension and atherosclerosis.

In summary, gene targeting in mice has pervaded all fields of biomedicine. Its impact on the understanding of gene function and its benefits to mankind will continue to increase over many years to come.

**Mario R. Capecchi**, born 1937 in Italy, US citizen, PhD in Biophysics 1967, Harvard University, Cambridge, MA, USA. Howard Hughes Medical Institute Investigator and Distinguished Professor of Human Genetics and Biology at the University of Utah, Salt Lake City, UT, USA.

**Sir Martin J. Evans**, born 1941 in Great Britain, British citizen, PhD in Anatomy and Embryology 1969, University College, London, UK. Director of the School of Biosciences and Professor of Mammalian Genetics, Cardiff University, UK.

**Oliver Smithies**, born 1925 in Great Britain, US citizen, PhD in Biochemistry 1951, Oxford University, UK. Excellence Professor of Pathology and Laboratory Medicine, University of North Carolina at Chapel Hill, NC, USA.
1. WHILE READING THE TEXT TRY TO UNDERSTAND THE IMPORTANCE OF THE DISCOVERY TO MEDICINE AND SPEAK ABOUT THE APPLICATION OF “RNA INTERFERENCE – GENE SILENCING BY DOUBLESTRANDED RNA” IN MEDICINE

Press Release

2 October 2006

The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2006 jointly to Andrew Z. Fire and Craig C. Mello for their discovery of “RNA interference – gene silencing by double-stranded RNA”

Summary

This year's Nobel Laureates have discovered a fundamental mechanism for controlling the flow of genetic information. Our genome operates by sending instructions for the manufacture of proteins from DNA in the nucleus of the cell to the protein synthesizing machinery in the cytoplasm. These instructions are conveyed by messenger RNA (mRNA). In 1998, the American scientists Andrew Fire and Craig Mello published their discovery of a mechanism that can degrade mRNA from a specific gene. This mechanism, RNA interference, is activated when RNA molecules occur as double-stranded pairs in the cell. Double-stranded RNA activates biochemical machinery which degrades those mRNA molecules that carry a genetic code identical to that of the double-stranded RNA. When such mRNA molecules disappear, the corresponding gene is silenced and no protein of the encoded type is made.

RNA interference occurs in plants, animals, and humans. It is of great importance for the regulation of gene expression, participates in defense against viral infections, and keeps jumping genes under control. RNA interference is already being widely used in basic science as a method to study the function of genes and it may lead to novel therapies in the future.
The flow of information in the cell: from DNA via mRNA to protein

The genetic code in DNA determines how proteins are built. The instructions contained in the DNA are copied to mRNA and subsequently used to synthesize proteins. This flow of genetic information from DNA via mRNA to protein has been termed the central dogma of molecular biology by the British Nobel Laureate Francis Crick. Proteins are involved in all processes of life, for instance as enzymes digesting our food, receptors receiving signals in the brain, and as antibodies defending us against bacteria.

Our genome consists of approximately 30,000 genes. However, only a fraction of them are used in each cell. Which genes are expressed (i.e. govern the synthesis of new proteins) is controlled by the machinery that copies DNA to mRNA in a process called transcription. It, in turn, can be modulated by various factors. The fundamental principles for the regulation of gene expression were identified more than 40 years ago by the French Nobel Laureates François Jacob and Jacques Monod. Today, we know that similar principles operate throughout evolution, from bacteria to humans. They also form the basis for gene technology, in which a DNA sequence is introduced into a cell to produce new protein.

Around 1990, molecular biologists obtained a number of unexpected results that were difficult to explain. The most striking effects were observed by plant biologists who were trying to increase the colour intensity of the petals in petunias by introducing a gene inducing the formation of red pigment in the flowers. But instead of intensifying the colour, this treatment led to a complete loss of colour and the petals turned white! The mechanism causing these effects remained enigmatic until Fire and Mello made the discovery for which they receive this year's Nobel Prize.
The discovery of RNA interference

Andrew Fire and Craig Mello were investigating how gene expression is regulated in the nematode worm *Caenorhabditis elegans*. Injecting mRNA molecules encoding a muscle protein led to no changes in the behaviour of the worms. The genetic code in mRNA is described as being the 'sense' sequence, and injecting 'antisense' RNA, which can pair with the mRNA, also had no effect. But when Fire and Mello injected sense and antisense RNA together, they observed that the worms displayed peculiar, twitching movements. Similar movements were seen in worms that completely lacked a functioning gene for the muscle protein. What had happened?

When sense and antisense RNA molecules meet, they bind to each other and form double-stranded RNA. Could it be that such a double-stranded RNA molecule silences the gene carrying the same code as this particular RNA? Fire and Mello tested this hypothesis by injecting double-stranded RNA molecules containing the genetic codes for several other worm proteins. In every experiment, injection of double-stranded RNA carrying a genetic code led to silencing of the gene containing that particular code. The protein encoded by that gene was no longer formed.

After a series of simple but elegant experiments, Fire and Mello deduced that double-stranded RNA can silence genes that this RNA interference is specific for the gene whose code matches that of the injected RNA molecule, and that RNA interference can spread between cells and even be inherited. It was enough to inject tiny amounts of double-stranded RNA to achieve an effect, and Fire and Mello therefore proposed that RNA interference (now commonly abbreviated to RNAi) is a catalytic process.

Fire and Mello published their findings in the journal *Nature* on February 19, 1998. Their discovery clarified many confusing and contradictory experimental observations and revealed a natural mechanism for controlling the flow of genetic information. This heralded the start of a new research field.
The RNA interference machinery is unraveled

The components of the RNAi machinery were identified during the following years. Double-stranded RNA binds to a protein complex, Dicer, which cleaves it into fragments. Another protein complex, RISC, binds these fragments. One of the RNA strands is eliminated but the other remains bound to the RISC complex and serves as a probe to detect mRNA molecules. When an mRNA molecule can pair with the RNA fragment on RISC, it is bound to the RISC complex, cleaved and degraded. The gene served by this particular mRNA has been silenced.

RNA interference – a defense against viruses and jumping genes

RNA interference is important in the defense against viruses, particularly in lower organisms. Many viruses have a genetic code that contains double-stranded RNA. When such a virus infects a cell, it injects its RNA molecule, which immediately binds to Dicer (Fig 4A). The RISC complex is activated, viral RNA is degraded, and the cell survives the infection. In addition to this defense, higher organisms such as man have developed an efficient immune defense involving antibodies, killer cells, and interferons.

Jumping genes, also known as transposons, are DNA sequences that can move around in the genome. They are present in all organisms and can cause damage if they end up in the wrong place. Many transposons operate by copying their DNA to RNA, which is then reverse-transcribed back to DNA and inserted at another site in the genome. Part of this RNA molecule is often double-stranded and can be targeted by RNA interference. In this way, RNA interference protects the genome against transposons.

RNA interference regulates gene expression

RNA interference is used to regulate gene expression in the cells of humans as well as worms (Fig 4B). Hundreds of genes in our genome encode small RNA molecules called microRNAs. They contain pieces of the code of other genes. Such a microRNA
molecule can form a double-stranded structure and activate the RNA interference machinery to block protein synthesis. The expression of that particular gene is silenced. We now understand that genetic regulation by microRNAs plays an important role in the development of the organism and the control of cellular functions.

New opportunities in biomedical research, gene technology and health care

RNA interference opens up exciting possibilities for use in gene technology. Double-stranded RNA molecules have been designed to activate the silencing of specific genes in humans, animals or plants (Fig 4C). Such silencing RNA molecules are introduced into the cell and activate the RNA interference machinery to break down mRNA with an identical code.

This method has already become an important research tool in biology and biomedicine. In the future, it is hoped that it will be used in many disciplines including clinical medicine and agriculture. Several recent publications show successful gene silencing in human cells and experimental animals. For instance, a gene causing high blood cholesterol levels was recently shown to be silenced by treating animals with silencing RNA. Plans are underway to develop silencing RNA as a treatment for virus infections, cardiovascular diseases, cancer, endocrine disorders and several other conditions.

TASKS 9.1.5

1. READ THE TEXT AND TRY TO ANSWER THE QUESTIONS:

1) Are there as many types of olfactory receptor cells as there are odorant receptors?
2) What is the basis for our ability to recognize and form memories?
3) What is the olfactory system important for?

Press Release
4 October 2004

The Nobel Assembly at Karolinska Institutet has today decided to award
The Nobel Prize in Physiology or Medicine for 2004 jointly to Richard Axel and
Linda B. Buck for their discoveries of “odorant receptors and the organization of the
olfactory system”

Summary

The sense of smell long remained the most enigmatic of our senses. The basic
principles for recognizing and remembering about 10,000 different odours were not
understood. This year's Nobel Laureates in Physiology or Medicine have solved this
problem and in a series of pioneering studies clarified how our olfactory system works.
They discovered a large gene family, comprised of some 1,000 different genes (three
per cent of our genes) that give rise to an equivalent number of olfactory receptor types.
These receptors are located on the olfactory receptor cells, which occupy a small area in
the upper part of the nasal epithelium and detect the inhaled odorant molecules.

Each olfactory receptor cell possesses only one type of odorant receptor, and each
receptor can detect a limited number of odorant substances. Our olfactory receptor cells
are therefore highly specialized for a few odours. The cells send thin nerve processes
directly to distinct micro domains, glomeruli, in the olfactory bulb, the primary
olfactory area of the brain. Receptor cells carrying the same type of receptor send their
nerve processes to the same glomerulus. From these micro domains in the olfactory
bulb the information is relayed further to other parts of the brain, where the information
from several olfactory receptors is combined, forming a pattern. Therefore, we can
consciously experience the smell of a lilac flower in the spring and recall this olfactory
memory at other times.

Richard Axel, New York, USA, and Linda Buck, Seattle, USA, published the
fundamental paper jointly in 1991, in which they described the very large family of
about one thousand genes for odorant receptors. Axel and Buck have since worked
independent of each other, and they have in several elegant, often parallel, studies
clarified the olfactory system, from the molecular level to the organization of the cells.
The olfactory system is important for life quality

When something tastes really good it is primarily activation of the olfactory system which helps us detect the qualities we regard as positive. A good wine or a sunripe wild strawberry activates a whole array of odorant receptors, helping us to perceive the different odorant molecules.

A unique odour can trigger distinct memories from our childhood or from emotional moments – positive or negative – later in life. A single clam that is not fresh and will cause malaise can leave a memory that stays with us for years, and prevent us from ingesting any dish, however delicious, with clams in it. To lose the sense of smell is a serious handicap – we no longer perceive the different qualities of food and we cannot detect warning signals, for example smoke from a fire.

Olfaction is of central importance for most species

All living organisms can detect and identify chemical substances in their environment. It is obviously of great survival value to be able to identify suitable food and to avoid putrid or unfit foodstuff. Whereas fish has a relatively small number of odorant receptors, about one hundred, mice – the species Axel and Buck studied – have about one thousand. Humans have a somewhat smaller number than mice; some of the genes have been lost during evolution.

Smell is absolutely essential for a newborn mammalian pup to find the teats of its mother and obtain milk – without olfaction the pup does not survive unaided. Olfaction is also of paramount importance for many adult animals, since they observe and interpret their environment largely by sensing smell. For example, the area of the olfactory epithelium in dogs is some forty times larger than in humans.
A large family of odorant receptors

The olfactory system is the first of our sensory systems that has been deciphered primarily using molecular techniques. Axel and Buck showed that three per cent of our genes are used to code for the different odorant receptors on the membrane of the olfactory receptor cells. When an odorant receptor is activated by an odorous substance, an electric signal is triggered in the olfactory receptor cell and sent to the brain via nerve processes. Each odorant receptor first activates a G protein, to which it is coupled. The G protein in turn stimulates the formation of cAMP (cyclic AMP). This messenger molecule activates ion channels, which are opened and the cell is activated. Axel and Buck showed that the large family of odorant receptors belongs to the G protein-coupled receptors (GPCR).

All the odorant receptors are related proteins but differ in certain details, explaining why they are triggered by different odorous molecules. Each receptor consists of a chain of amino acids that is anchored into the cell membrane and traverses it seven times. The chain creates a binding pocket where the odorant can attach. When that happens, the shape of the receptor protein is altered, leading to G protein activation.

One type of odorant receptor in each olfactory receptor cell

Independently, Axel and Buck showed that every single olfactory receptor cell expresses one and only one of the odorant receptor genes. Thus, there are as many types of olfactory receptor cells as there are odorant receptors. It was possible to show, by registering the electrical signals coming from single olfactory receptor cells, that each cell does not react only to one odorous substance, but to several related molecules – albeit with varying intensity.

Buck's research group examined the sensitivity of individual olfactory receptor cells to specific odorants. By means of a pipette, they emptied the contents of each cell and showed exactly which odorant receptor gene was expressed in that cell. In this way,
they could correlate the response to a specific odorant with the particular type of receptor carried by that cell.

Most odours are composed of multiple odorant molecules, and each odorant molecule activates several odorant receptors. This leads to a combinatorial code forming an “odorant pattern” – somewhat like the colours in a patchwork quilt or in a mosaic. This is the basis for our ability to recognize and form memories of approximately 10,000 different odours.

Olfactory receptor cells activate micro regions in the olfactory bulb

The finding that each olfactory receptor cell only expresses one single odorant receptor gene was highly unexpected. Axel and Buck continued by determining the organization of the first relay station in the brain. The olfactory receptor cell sends its nerve processes to the olfactory bulb, where there are some 2,000 well-defined microregions, glomeruli. There are thus about twice as many glomeruli as the types of olfactory receptor cells.

Axel and Buck independently showed that receptor cells carrying the same type of receptor converge their processes into the same glomerulus, and Axel's research group used sophisticated genetic technology to demonstrate in mice the role of the receptor in this process. The convergence of information from cells with the same receptor into the same glomerulus demonstrated that also glomeruli exhibit remarkable specificity (see figure).

In the glomeruli we find not only the nerve processes from the olfactory receptor cells but also their contacts with the next level of nerve cells, the mitral cells. Each mitral cell is activated only by one glomerulus, and the specificity in the information flow is thereby maintained. Via long nerve processes, the mitral cells send the information to several parts of the brain. Buck showed that these nerve signals in turn reach defined micro regions in the brain cortex. Here the information from several types of odorant receptors is combined into a pattern characteristic for each odour. This is interpreted and leads to the conscious experience of a recognizable odour.
Pheromones and taste

The general principles that Axel and Buck discovered for the olfactory system appears to apply also to other sensory systems. Pheromones are molecules that can influence different social behaviours, especially in animals. Axel and Buck, independent of each other, discovered that pheromones are detected by two other families of GPCR, localized to a different part of the nasal epithelium. The taste buds of the tongue have yet another family of GPCR, which is associated with the sense of taste.

TASKS 9.1.6

1. READ THE TEXT ABOUT MAGNETIC RESONANCE IMAGING (MRI) AND POINT OUT ABSTRACTS ABOUT:

1) Importance of MRI
2) Importance of MRI to medicine

Press Release

6 October 2003

The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2003 jointly to Paul C Lauterbur and Peter Mansfield for their discoveries concerning “magnetic resonance imaging”.

A) Summary

Imaging of human internal organs with exact and non-invasive methods is very important for medical diagnosis, treatment and follow-up. This year's Nobel Laureates in Physiology or Medicine have made seminal discoveries concerning the use of magnetic resonance to visualize different structures. These discoveries have led to the development of modern magnetic resonance imaging, MRI, which represents a breakthrough in medical diagnostics and research.
Atomic nuclei in a strong magnetic field rotate with a frequency that is dependent on the strength of the magnetic field. Their energy can be increased if they absorb radio waves with the same frequency (resonance). When the atomic nuclei return to their previous energy level, radio waves are emitted. These discoveries were awarded the Nobel Prize in Physics in 1952. During the following decades, magnetic resonance was used mainly for studies of the chemical structure of substances. In the beginning of the 1970s, this year’s Nobel Laureates made pioneering contributions, which later led to the applications of magnetic resonance in medical imaging.

**Paul Lauterbur** (born 1929), Urbana, Illinois, USA, discovered the possibility to create a two-dimensional picture by introducing gradients in the magnetic field. By analysis of the characteristics of the emitted radio waves, he could determine their origin. This made it possible to build up two-dimensional pictures of structures that could not be visualized with other methods.

**Peter Mansfield** (born 1933), Nottingham, England, further developed the utilization of gradients in the magnetic field. He showed how the signals could be mathematically analysed, which made it possible to develop a useful imaging technique. Mansfield also showed how extremely fast imaging could be achievable. This became technically possible within medicine a decade later.

B)

*MRI is used for imaging of all organs in the body.*
Magnetic resonance imaging, MRI, is now a routine method within medical diagnostics. Worldwide, more than 60 million investigations with MRI are performed each year, and the method is still in rapid development. MRI is often superior to other imaging techniques and has significantly improved diagnostics in many diseases. MRI has replaced several invasive modes of examination and thereby reduced the risk and discomfort for many patients.

Nuclei of hydrogen atoms

Water constitutes about two thirds of the human body weight, and this high water content explains why magnetic resonance imaging has become widely applicable to medicine. There are differences in water content among tissues and organs. In many diseases the pathological process results in changes of the water content, and this is reflected in the MR image.

Water is a molecule composed of hydrogen and oxygen atoms. The nuclei of the hydrogen atoms are able to act as microscopic compass needles. When the body is exposed to a strong magnetic field, the nuclei of the hydrogen atoms are directed into order – stand “at attention”. When submitted to pulses of radio waves, the energy content of the nuclei changes. After the pulse, a resonance wave is emitted when the nuclei return to their previous state.

The small differences in the oscillations of the nuclei are detected. By advanced computer processing, it is possible to build up a three-dimensional image that reflects the chemical structure of the tissue, including differences in the water content and in movements of the water molecules. This results in a very detailed image of tissues and organs in the investigated area of the body. In this manner, pathological changes can be documented.

Several Nobel Prizes

The resonance phenomenon is governed by a simple relation between the strength of the magnetic field and the frequency of the radio waves. For every type of atomic
nucleus with unpaired protons and/or neutrons, there is a mathematical constant by which it is possible to determine the wavelength as a function of the strength of the magnetic field. This phenomenon was demonstrated in 1946 for protons (the smallest of all atomic nuclei) by Felix Bloch and Edward Mills Purcell, USA. They were awarded the Nobel Prize in Physics in 1952.

Other fundamental discoveries concerning magnetic resonance have in recent years resulted in two Nobel Prizes in Chemistry. In 1991, Richard Ernst, Switzerland, was awarded for his contributions to the development of the methodology of high resolution nuclear magnetic resonance spectroscopy. In 2002, Kurt Wüthrich, also Switzerland, was awarded for his development of nuclear magnetic resonance spectroscopy for determination of the three-dimensional structure of biological macromolecules in solution.

C) Discoveries of importance to medicine

This year's Nobel Laureates in Physiology or Medicine are awarded for crucial achievements in the development of applications of medical importance. In the beginning of the 1970s, they made seminal discoveries concerning the development of the technique to visualize different structures. These findings provided the basis for the development of magnetic resonance into a useful imaging method.

Paul Lauterbur discovered that introduction of gradients in the magnetic field made it possible to create two-dimensional images of structures that could not be visualized by other techniques. In 1973, he described how addition of gradient magnets to the main magnet made it possible to visualize a cross section of tubes with ordinary water surrounded by heavy water. No other imaging method can differentiate between ordinary and heavy water.

Peter Mansfield utilized gradients in the magnetic field in order to more precisely show differences in the resonance. He showed how the detected signals rapidly and effectively could be analysed and transformed to an image. This was an essential step in
order to obtain a practical method. Mansfield also showed how extremely rapid imaging could be achieved by very fast gradient variations (so called echo-planar scanning). This technique became useful in clinical practice a decade later.

D) Rapid development within medicine

The medical use of magnetic resonance imaging has developed rapidly. The first MRI equipments in health were available at the beginning of the 1980s. In 2002, approximately 22,000 MRI cameras were in use worldwide, and more than 60 million MRI examinations were performed.

A great advantage with MRI is that it is harmless according to all present knowledge. The method does not use ionizing radiation, in contrast to ordinary X-ray (Nobel Prize in Physics in 1901) or computer tomography (Nobel Prize in Physiology or Medicine in 1979) examinations. However, patients with magnetic metal in the body or a pacemaker cannot be examined with MRI due to the strong magnetic field, and patients with claustrophobia may have difficulties undergoing MRI.

Especially valuable for examination of the brain and the spinal cord

Today, MRI is used to examine almost all organs of the body. The technique is especially valuable for detailed imaging of the brain and the spinal cord. Nearly all brain disorders lead to alterations in water content, which is reflected in the MRI picture. A difference in water content of less than a percent is enough to detect a pathological change.

In multiple sclerosis, examination with MRI is superior for diagnosis and follow-up of the disease. The symptoms associated with multiple sclerosis are caused by local inflammation in the brain and the spinal cord. With MRI, it is possible to see where in the nervous system the inflammation is localized, how intense it is, and also how it is influenced by treatment.
Examination with MRI is especially valuable for detailed imaging of the brain and the spinal cord.

Another example is prolonged lower back pain, leading to great suffering for the patient and to high costs for the society. It is important to be able to differentiate between muscle pain and pain caused by pressure on a nerve or the spinal cord. MRI examinations have been able to replace previous methods which were unpleasant for the patient. With MRI, it is possible to see if a disc herniation is pressing on a nerve and to determine if an operation is necessary.

E) Important preoperative tool

Since MRI yields detailed three-dimensional images, it is possible to get distinct information on where a lesion is localized. Such information is valuable before surgery. For instance, in certain microsurgical brain operations, the surgeon can operate with guidance from the MRI results. The images are detailed enough to allow placement of electrodes in central brain nuclei in order to treat severe pain or to treat movement disorders in Parkinson's disease.

Improved diagnostics in cancer
MRI examinations are very important in diagnosis, treatment and follow-up of cancer. The images can exactly reveal the limits of a tumour, which contributes to more precise surgery and radiation therapy. Before surgery, it is important to know whether the tumour has infiltrated the surrounding tissue. MRI can more exactly than other methods differentiate between tissues and thereby contribute to improved surgery.

MRI has also improved the possibilities to ascertain the stage of a tumour, and this is important for the choice of treatment. For example, MRI can determine how deep in the tissue a colon cancer has infiltrated and whether regional lymph nodes have been affected.

Reduced suffering for patients

MRI can replace previously used invasive examinations and thereby reduce the suffering for many patients. One example is investigation of the pancreatic and bile ducts with contrast media injection via an endoscope. This can in some cases lead to serious complications. Today, corresponding information can be obtained by MRI.

Diagnostic arthroscopy (examination with an optic instrument inserted into the joint) can be replaced by MRI. In the knee, it is possible to perform detailed MRI studies of the joint cartilage and the cruciate ligaments. Since no invasive instrument is needed in MRI, the risk of infection is eliminated.

TASKS 9.1.7

1. WHILE READING THE TEXT POINT OUT THE PART(S) OF IT WHICH MAY HELP YOU TO PROVE THE IMPORTANCE OF THE DISCOVERIES CONCERNING “GENETIC REGULATION OF ORGAN DEVELOPMENT AND PROGRAMMED CELL DEATH”

Press Release

7 October 2002
The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2002 jointly to Sydney Brenner, H. Robert Horvitz and John E. Sulston for their discoveries concerning “genetic regulation of organ development and programmed cell death”.

A) Summary

The human body consists of hundreds of cell types, all originating from the fertilized egg. During the embryonic and foetal periods, the number of cells increase dramatically. The cells mature and become specialized to form the various tissues and organs of the body. Large numbers of cells are formed also in the adult body. In parallel with this generation of new cells, cell death is a normal process, both in the foetus and adult, to maintain the appropriate number of cells in the tissues. This delicate, controlled elimination of cells is called programmed cell death.

This year's Nobel Laureates in Physiology or Medicine have made seminal discoveries concerning the genetic regulation of organ development and programmed cell death. By establishing and using the nematode Caenorhabditis elegans as an experimental model system, possibilities were opened to follow cell division and differentiation from the fertilized egg to the adult. The Laureates have identified key genes regulating organ development and programmed cell death and have shown that corresponding genes exist in higher species, including man. The discoveries are important for medical research and have shed new light on the pathogenesis of many diseases.

B) Sydney Brenner (b 1927), Berkeley, CA, USA, established C. elegans as a novel experimental model organism. This provided a unique opportunity to link genetic analysis to cell division, differentiation and organ development – and to follow these processes under the microscope. Brenner's discoveries, carried out in Cambridge, UK, laid the foundation for this year's Prize.

John Sulston (b 1942), Cambridge, England, mapped a cell lineage where every cell division and differentiation could be followed in the development of a tissue in C.
Robert Horvitz (b 1947), Cambridge, MA, USA, has discovered and characterized key genes controlling cell death in *C. elegans*. He has shown how these genes interact with each other in the cell death process and that corresponding genes exist in humans.

C) Cell lineage – from egg to adult

All cells in our body are descendents from the fertilized egg cell. Their relationship can be referred to as a cellular pedigree or cell lineage. Cells differentiate and specialize to form various tissues and organs, for example muscle, blood, heart and the nervous system. The human body consists of several hundreds of cell types, and the cooperation between specialized cells makes the body function as an integrated unit. To maintain the appropriate number of cells in the tissues, a fine-tuned balance between cell division and cell death is required. Cells have to differentiate in a correct manner and at the right time during development in order to generate the correct cell type.

It is of considerable biological and medical importance to understand how these complicated processes are controlled. In unicellular model organisms, e.g. bacteria and yeast, organ development and the interplay between different cells cannot be studied. Mammals, on the other hand, are too complex for these basic studies, as they are composed of an enormous number of cells. The nematode *C. elegans*, being multicellular, yet relatively simple, was therefore chosen as the most appropriate model system, which has then led to characterization of these processes also in humans.

D) Programmed cell death

Normal life requires cell division to generate new cells but also the presence of cell death, so that a balance is maintained in our organs. In an adult human being, more than
a thousand billion cells are created every day. At the same time, an equal number of cells die through a controlled “suicide process”, referred to as programmed cell death.

Developmental biologists first described programmed cell death. They noted that cell death was necessary for embryonic development, for example when tadpoles undergo metamorphosis to become adult frogs. In the human foetus, the interdigital mesoderm initially formed between fingers and toes is removed by programmed cell death. The vast excess of neuronal cells present during the early stages of brain development is also eliminated by the same mechanism.

The seminal breakthrough in our understanding of programmed cell death was made by this year's Nobel Laureates. They discovered that specific genes control the cellular death program in the nematode *C. elegans*. Detailed studies in this simple model organism demonstrated that 131 of totally 1090 cells die reproducibly during development, and that this natural cell death is controlled by a unique set of genes.

E) The model organism *C. elegans*

Sydney Brenner realized, in the early 1960s, that fundamental questions regarding cell differentiation and organ development were hard to tackle in higher animals. Therefore, a genetically amenable and multicellular model organism simpler than mammals, was required. The ideal solution proved to be the nematode *Caenorhabditis elegans*. This worm, approximately 1 mm long, has a short generation time and is transparent, which made it possible to follow cell division directly under the microscope.

Brenner provided the basis in a publication from 1974, in which he broke new ground by demonstrating that specific gene mutations could be induced in the genome of *C. elegans* by the chemical compound EMS (ethyl methane sulphonate). Different mutations could be linked to specific genes and to specific effects on organ development. This combination of genetic analysis and visualization of cell divisions observed under the microscope initiated the discoveries that are awarded by this year's Nobel Prize.
Mapping the cell lineage

**John Sulston** extended Brenner's work with *C. elegans* and developed techniques to study all cell divisions in the nematode, from the fertilized egg to the 959 cells in the adult organism. In a publication from 1976, Sulston described the cell lineage for a part of the developing nervous system. He showed that the cell lineage is invariant, i.e. every nematode underwent exactly the same program of cell division and differentiation.

As a result of these findings Sulston made the seminal discovery that specific cells in the cell lineage always die through programmed cell death and that this could be monitored in the living organism. He described the visible steps in the cellular death process and demonstrated the first mutations of genes participating in programmed cell death, including the *nuc-1* gene. Sulston also showed that the protein encoded by the *nuc-1* gene is required for degradation of the DNA of the dead cell.

F) Identification of “death genes”

**Robert Horvitz** continued Brenner's and Sulston's work on the genetics and cell lineage of *C. elegans*. In a series of elegant experiments that started during the 1970s, Horvitz used *C. elegans* to investigate whether there was a genetic program controlling cell death. In a pioneering publication from 1986, he identified the first two bona fide “death genes”, *ced-3* and *ced-4*. He showed that functional *ced-3* and *ced-4* genes were a prerequisite for cell death to be executed.

Later, Horvitz showed that another gene, *ced-9*, protects against cell death by interacting with *ced-4* and *ced-3*. He also identified a number of genes that direct how the dead cell is eliminated. Horvitz showed that the human genome contains a *ced-3*-like gene. We now know that most genes that are involved in controlling cell death in *C. elegans*, have counterparts in humans.
Of importance for many research disciplines

The development of *C. elegans* as a novel experimental model system, the characterization of its invariant cell lineage, and the possibility to link this to genetic analysis have proven valuable for many research disciplines. For example, this is true for developmental biology and for analysis of the functions of various signaling pathways in a multicellular organism. The characterization of genes controlling programmed cell death in *C. elegans* soon made it possible to identify related genes with similar functions in humans. It is now clear that one of the signaling pathways in humans leading to cell death is evolutionarily well conserved. In this pathway *ced-3-*-, *ced-4-* and *ced-9*-like molecules participate. Understanding perturbations in this and other signaling pathways controlling cell death are of prime importance for medicine.

G) Disease and programmed cell death

Knowledge of programmed cell death has helped us to understand the mechanisms by which some viruses and bacteria invade our cells. We also know that in AIDS, neurodegenerative diseases, stroke and myocardial infarction, cells are lost as a result of excessive cell death. Other diseases, like autoimmune conditions and cancer, are characterized by a reduction in cell death, leading to the survival of cells normally destined to die.

Research on programmed cell death is intense, including in the field of cancer. Many treatment strategies are based on stimulation of the cellular “suicide program”. This is, for the future, a most interesting and challenging task to further explore in order to reach a more refined manner to induce cell death in cancer cells.
Using the nematode *C. elegans* this year's Nobel Laureates have demonstrated how organ development and programmed cell death are genetically regulated. They have identified key genes regulating programmed cell death and demonstrated that corresponding genes exist also in higher animals, including man. The figure schematically illustrates the cell lineage (top left) and the programmed cell death (below) in *C. elegans*. The fertilized egg cell undergoes a series of cell divisions leading to cell differentiation and cell specialization, eventually producing the adult organism (top right). In *C. elegans*, all cell divisions and differentiations are invariant, i.e. identical from individual to individual, which made it possible to construct a cell lineage for all cell divisions. During development, 1090 cells are generated, but precisely 131 of these cells are eliminated by programmed cell death. This results in an adult nematode (the hermaphrodite), composed of 959 somatic cells.

**TASKS 9.1.8**

1. READ THE TEXT AND TRY TO UNDERSTAND. IN WHAT FIELD OF MEDICINE THESE DISCOVERIES MAY BE APPLIED?

Press Release

8 October 2001
The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2001 jointly to & Leland H. Hartwell, R. Timothy (Tim) Hunt and Paul M. Nurse for their discoveries of “key regulators of the cell cycle”

Summary

All organisms consist of cells that multiply through cell division. An adult human being has approximately 100 000 billion cells, all originating from a single cell, the fertilized egg cell. In adults there is also an enormous number of continuously dividing cells replacing those dying. Before a cell can divide it has to grow in size, duplicate its chromosomes and separate the chromosomes for exact distribution between the two daughter cells. These different processes are coordinated in the cell cycle.

This year's Nobel Laureates in Physiology or Medicine have made seminal discoveries concerning the control of the cell cycle. They have identified key molecules that regulate the cell cycle in all eukaryotic organisms, including yeasts, plants, animals and human. These fundamental discoveries have a great impact on all aspects of cell growth. Defects in cell cycle control may lead to the type of chromosome alterations seen in cancer cells. This may in the long term open new possibilities for cancer treatment.

Leland Hartwell (born 1939), Fred Hutchinson Cancer Research Center, Seattle, USA, is awarded for his discoveries of a specific class of genes that control the cell cycle. One of these genes called “start” was found to have a central role in controlling the first step of each cell cycle. Hartwell also introduced the concept “checkpoint”, a valuable aid to understanding the cell cycle.

Paul Nurse (born 1949), Imperial Cancer Research Fund, London, identified, cloned and characterized with genetic and molecular methods, one of the key regulators of the cell cycle, CDK (cyclin dependent kinase). He showed that the function of CDK was highly conserved during evolution. CDK drives the cell through the cell cycle by chemical modification (phosphorylation) of other proteins.
Timothy Hunt (born 1943), Imperial Cancer Research Fund, London, is awarded for his discovery of cyclins, proteins that regulate the CDK function. He showed that cyclins are degraded periodically at each cell division, a mechanism proved to be of general importance for cell cycle control.

One billion cells per gram tissue

Cells having their chromosomes located in a nucleus and separated from the rest of the cell, so called eukaryotic cells, appeared on earth about two billion years ago. Organisms consisting of such cells can either be unicellular, such as yeasts and amoebas, or multi-cellular such as plants and animals. The human body consists of a huge number of cells, on the average about one billion cells per gram tissue. Each cell nucleus contains our entire hereditary material (DNA), located in 46 chromosomes (23 pairs of chromosomes).

It has been known for over one hundred years that cells multiply through division. It is however only during the last two decades that it has become possible to identify the molecular mechanisms that regulate the cell cycle and thereby cell division. These fundamental mechanisms are highly conserved through evolution and operate in the same manner in all eukaryotic organisms.

The phases of the cell cycle

The cell cycle consists of several phases (see figure). In the first phase (G1) the cell grows and becomes larger. When it has reached a certain size it enters the next phase (S), in which DNA-synthesis takes place. The cell duplicates its hereditary material (DNA-replication) and a copy of each chromosome is formed. During the next phase (G2) the cell checks that DNA-replication is completed and prepares for cell division. The chromosomes are separated (mitosis, M) and the cell divides into two daughter cells. Through this mechanism the daughter cells receive identical chromosome set ups. After division, the cells are back in G1 and the cell cycle is completed.
The duration of the cell cycle varies between different cell types. In most mammalian cells it lasts between 10 and 30 hours. Cells in the first cell cycle phase (G1) do not always continue through the cycle. Instead they can exit from the cell cycle and enter a resting stage (G0).

Cell cycle control

For all living eukaryotic organisms it is essential that the different phases of the cell cycle are precisely coordinated. The phases must follow in correct order, and one phase must be completed before the next phase can begin. Errors in this coordination may lead to chromosomal alterations. Chromosomes or parts of chromosomes may be lost, rearranged or distributed unequally between the two daughter cells. This type of chromosome alteration is often seen in cancer cells.

It is of central importance in the fields of biology and medicine to understand how the cell cycle is controlled. This year's Nobel Laureates have made seminal discoveries at the molecular level of how the cell is driven from one phase to the next in the cell cycle.

Cell cycle genes in yeast cells

Leland Hartwell realized already at the end of the 1960s the possibility of studying the cell cycle with genetic methods. He used baker's yeast, *Saccharomyces cerevisiae*, as a model system, which proved to be highly suitable for cell cycle studies. In an elegant series of experiments 1970-71, he isolated yeast cells in which genes controlling the cell cycle were altered (mutated). By this approach he succeeded to identify more than one hundred genes specifically involved in cell cycle control, so called CDC-genes (cell division cycle genes). One of these genes, designated *CDC28* by Hartwell, controls the first step in the progression through the G1-phase of the cell cycle, and was therefore also called “start”.
In addition, Hartwell studied the sensitivity of yeast cells to irradiation. On the basis of his findings he introduced the concept checkpoint, which means that the cell cycle is arrested when DNA is damaged. The purpose of this is to allow time for DNA repair before the cell continues to the next phase of the cycle. Later Hartwell extended the checkpoint concept to include also controls ensuring a correct order between the cell cycle phases.

A general principle

**Paul Nurse** followed Hartwell's approach in using genetic methods for cell cycle studies. He used a different type of yeast, *Schizosaccharomyces pombe*, as a model organism. This yeast is only distantly related to baker's yeast, since they separated from each other during evolution more than one billion years ago.

In the middle of the 1970s, Paul Nurse discovered the gene cdc2 in *S. pombe*. He showed that this gene had a key function in the control of cell division (transition from G2 to mitosis, M). Later he found that cdc2 had a more general function. It was identical to the gene ("start") that Hartwell earlier had identified in baker's yeast, controlling the transition from G1 to S.

This gene (cdc2) was thus found to regulate different phases of the cell cycle. In 1987 Paul Nurse isolated the corresponding gene in humans, and it was later given the name CDK1 (cyclin dependent kinase 1). The gene encodes a protein that is a member of a family called cyclin dependent kinases, CDK. Nurse showed that activation of CDK is dependent on reversible phosphorylation, i.e. that phosphate groups are linked to or removed from proteins. On the basis of these findings, half a dozen different CDK molecules have been found in humans.

The discovery of the first cyclin

**Tim Hunt** discovered the first cyclin molecule in the early 1980s. Cyclins are proteins formed and degraded during each cell cycle. They were named cyclins because
the levels of these proteins vary periodically during the cell cycle. The cyclins bind to the CDK molecules, thereby regulating the CDK activity and selecting the proteins to be phosphorylated.

The discovery of cyclin, which was made using sea urchins, *Arbacia*, as a model system, was the result of Hunt's finding that this protein was degraded periodically in the cell cycle. Periodic protein degradation is an important general control mechanism of the cell cycle. Tim Hunt later discovered cyclins in other species and found that also the cyclins were conserved during evolution. Today around ten different cyclins have been found in humans.

The engine and the gear box of the cell cycle

The three Nobel Laureates have discovered molecular mechanisms that regulate the cell cycle. The amount of CDK-molecules is constant during the cell cycle, but their activities vary because of the regulatory function of the cyclins. CDK and cyclin together drive the cell from one cell cycle phase to the next. The CDK-molecules can be compared with an engine and the cyclins with a gear box controlling whether the engine will run in the idling state or drive the cell forward in the cell cycle.

A great impact of the discoveries

Most biomedical research areas will benefit from these basic discoveries, which may result in broad applications within many different fields. The discoveries are important in understanding how chromosomal instability develops in cancer cells, i.e. how parts of chromosomes are rearranged, lost or distributed unequally between daughter cells. It is likely that such chromosome alterations are the result of defective cell cycle control. It has been shown that genes for CDK-molecules and cyclins can function as oncogenes. CDK-molecules and cyclins also collaborate with the products of tumour suppressor genes (e.g. p53 and Rb) during the cell cycle.
The findings in the cell cycle field are about to be applied to tumour diagnostics. Increased levels of CDK-molecules and cyclins are sometimes found in human tumours, such as breast cancer and brain tumours. The discoveries may in the long term also open new principles for cancer therapy. Already now clinical trials are in progress using inhibitors of CDK-molecules.

The different phases of the cell cycle. In the first phase (G1) the cell grows. When it has reached a certain size it enters the phase of DNA-synthesis (S) where the chromosomes are duplicated. During the next phase (G2) the cell prepares itself for division. During mitosis (M) the chromosomes are separated and segregated to the daughter cells, which thereby get exactly the same chromosome set up. The cells are then back in G1 and the cell cycle is completed.

This year's Nobel Laureates, using genetic and molecular biology methods, have discovered mechanisms controlling the cell cycle. CDK-
molecules and cyclins drive the cell from one phase to the next. The CDK-molecules can be compared with an engine and the cyclins with a gear box controlling whether the engine will run in the idling state or drive the cell forward in the cell cycle.

TASKS 9.1.9

1. READ THE TEXT AND TRY TO SPEAK ABOUT THE ROLE OF THE DISCOVERIES CONCERNING “SIGNAL TRANSDUCTION IN THE NERVOUS SYSTEM” TO MEDICINE

Press Release

NOBELFÖRSAMLINGEN KAROLINSKA INSTITUTET
THE NOBEL ASSEMBLY AT THE KAROLINSKA INSTITUTE

9 October 2000

The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2000 jointly to Arvid Carlsson, Paul Greengard and Eric Kandel for their discoveries concerning “signal transduction in the nervous system”

Summary

In the human brain there are more than hundred billion nerve cells. They are connected to each other through an infinitely complex network of nerve processes. The message from one nerve cell to another is transmitted through different chemical transmitters. The signal transduction takes place in special points of contact, called synapses. A nerve cell can have thousands of such contacts with other nerve cells.

The three Nobel Laureates in Physiology or Medicine have made pioneering discoveries concerning one type of signal transduction between nerve cells, referred to
as slow synaptic transmission. These discoveries have been crucial for an understanding of the normal function of the brain and how disturbances in this signal transduction can give rise to neurological and psychiatric diseases. These findings have resulted in the development of new drugs.

**Arvid Carlsson**, Department of Pharmacology, Göteborg University is rewarded for his discovery that dopamine is a transmitter in the brain and that it has great importance for our ability to control movements. His research has led to the realization that Parkinson's disease is caused by a lack of dopamine in certain parts of the brain and that an efficient remedy (L-dopa) for this disease could be developed. Arvid Carlsson has made a number of subsequent discoveries, which have further clarified the role of dopamine in the brain. He has thus demonstrated the mode of action of drugs used for the treatment of schizophrenia.

**Paul Greengard**, Laboratory of Molecular and Cellular Science, Rockefeller University, New York, is rewarded for his discovery of how dopamine and a number of other transmitters exert their action in the nervous system. The transmitter first acts on a receptor on the cell surface. This will trigger a cascade of reactions that will affect certain “key proteins” that in turn regulate a variety of functions in the nerve cell. The proteins become modified as phosphate groups are added (phosphorylation) or removed (dephosphorylation), which causes a change in the shape and function of the protein. Through this mechanism the transmitters can carry their message from one nerve cell to another.

**Eric Kandel**, Center for Neurobiology and Behavior, Columbia University, New York, is rewarded for his discoveries of how the efficiency of synapses can be modified, and which molecular mechanisms that take part. With the nervous system of a sea slug as experimental model he has demonstrated how changes of synaptic function are central for learning and memory. Protein phosphorylation in synapses plays an important role for the generation of a form of short term memory. For the development of a long term memory a change in protein synthesis is also required, which can lead to alterations in shape and function of the synapse.
Arvid Carlsson

Dopamine - an important transmitter Arvid Carlsson performed a series of pioneering studies during the late 1950’s, which showed that dopamine is an important transmitter in the brain. It was previously believed that dopamine was only a precursor of another transmitter, noradrenaline. Arvid Carlsson developed an assay that made it possible to measure tissue levels of dopamine with high sensitivity. He found that dopamine was concentrated in other areas of the brain than noradrenaline, which led him to the conclusion that dopamine is a transmitter in itself. Dopamine existed in particularly high concentrations in those parts of the brain, called the basal ganglia, which are of particular importance for the control of motor behavior. In a series of experiments Arvid Carlsson used a naturally occurring substance, reserpine, which depletes the storage of several synaptic transmitters. When it was given to experimental animals they lost their ability to perform spontaneous movements. He then treated the animals with L-dopa, a precursor of dopamine, which is transformed to dopamine in the brain. The symptoms disappeared and the animals resumed their normal motor behavior. In contrast, animals that received a precursor of the transmitter serotonin did not improve the motor behavior. Arvid Carlsson also showed that the treatment with L-dopa normalized the levels of dopamine in the brain. Drugs against Parkinson's disease Arvid Carlsson realized that the symptoms caused by reserpine were similar to the syndrome of Parkinson's disease. This led, in turn, to the finding that Parkinson patients have abnormally low concentrations of dopamine in the basal ganglia. As a consequence L-dopa was developed as a drug against Parkinson's disease and today still is the most important treatment for the disease. During Parkinson's disease dopamine producing nerve cells in the basal ganglia degenerate, which causes tremor, rigidity and akinesia. L-dopa, which is converted to dopamine in the brain, compensates for the lack of dopamine and normalizes motor behavior.
Antipsychotic and antidepressive drugs  Apart from the successful treatment of Parkinson's disease Arvid Carlsson's research has increased our understanding of the mechanism of several other drugs. He showed that antipsychotic drugs, mostly used against schizophrenia, affect synaptic transmission by blocking dopamine receptors. The discoveries of Arvid Carlsson have had great importance for the treatment of depression, which is one of our most common diseases. He has contributed strongly to the development of selective serotonin uptake blockers, a new generation of antidepressive drugs.

Figure 1. Dopamine nerve pathways in the brain. Arvid Carlsson showed that there were particularly high levels of the chemical transmitter dopamine in the so called basal ganglia of the brain, which are of major importance for instance for the control of our muscle movements. In Parkinson's disease those dopamine producing nerve cells whose nerve fibers project to the basal ganglia die. This causes symptoms such as tremor, muscle rigidity and a decreased ability to move about.
Figure 2. A message from one nerve cell to another is transmitted with the help of different chemical transmitters. This occurs at specific points of contact, synapses, between the nerve cells. The chemical transmitter dopamine is formed from the precursors tyrosine and L-dopa and is stored in vesicles in the nerve endings. When a nerve impulse causes the vesicles to empty, dopamine receptors in the membrane of the receiving cell are influenced such that the message is carried further into the cell. In the treatment of Parkinson's disease, the drug L-dopa is given, and is converted to dopamine in the brain. This compensates for the patient's lack of dopamine.

Paul Greengard
Slow synaptic transmission towards the end of the 1960’s it was known that dopamine, noradrenaline and serotonin were transmitters in the central nervous system but knowledge about their mechanism of action was lacking. Paul Greengard receives the Nobel Prize for his discoveries of how they exert their effects at the synapse.

Transmitters such as dopamine, noradrenaline, serotonin and certain neuropeptides transmit their signals by what is referred to as slow synaptic transmission. The resulting change in the function of the nerve cell may last from seconds to hours. This type of signal transmission is responsible for a number of basal functions in the nervous system and is of importance for e.g. alertness and mood. Slow synaptic transmission can also control fast synaptic transmission, which in turn enables e.g. speech, movements and sensory perception.

Phosphorylation of proteins changes the function of nerve cells

Paul Greengard showed that slow synaptic transmission involves a chemical reaction called protein phosphorylation. It means that phosphate groups are coupled to a protein in such a way that the form and function of the protein is altered. Paul Greengard showed that when dopamine stimulates a receptor in the cell membrane this causes an elevation of a second messenger, cyclic AMP, in the cell. It activates a Protein Kinase A, which is able to add phosphate molecules to other proteins in the nerve cell.

The protein phosphorylation affects a series of proteins with different functions in the nerve cell. One important group of such proteins form ion channels in the membrane of the cell. They control the excitability of the nerve cell and make it possible for the nerve cell to send electrical impulses along its axons and terminals. Each nerve cell has different ion channels, which determine the reaction of the cell. When a particular type of ion channel is phosphorylated the function of the nerve cell may be altered by, for example, a change in its excitability.

**DARPP-32 - a central regulatory protein** Paul Greengard has subsequently shown that even more complicated reactions occur in particular nerve cells. The effects
of the transmitters are elicited by a cascade of phosphorylations and dephosphorylations (that is, phosphate molecules are added or removed from the proteins). Dopamine and several other transmitters can influence a regulatory protein, DARPP-32, which indirectly changes the function of a large number of other proteins. The DARPP-32 protein is like a conductor directing a series of other molecules. When DARPP-32 is activated it affects several ion channels altering the function of particular fast synapses.

Paul Greengard's discoveries concerning protein phosphorylation have increased our understanding of the mechanism of action of several drugs, which specifically affects the phosphorylation of proteins in different nerve cells.

Figure 3. Paul Greengard has shown how dopamine and several other chemical transmitters exert their effects in the nerve cell.

When receptors in the cell membrane are influenced by a chemical transmitter, the levels of for example the messenger molecule cAMP are elevated.
This activates so called protein kinases, which cause certain “key proteins” to become phosphorylated, that is phosphate molecules are added. These protein phosphorylations lead to changes of a number of proteins with different functions in the cell. When for instance proteins in ion channels in the cell membrane are influenced, the excitability of a nerve cell and its ability to send impulses along its branches changes.

Eric Kandel

Sea slug, a model system for learning

A phosphorylation of proteins has great importance also for the discoveries for which Eric Kandel is rewarded, that is for revealing molecular mechanisms, important for the formation of memories. Eric Kandel started to study learning and memory in mammals, but realized that the conditions were too complex to provide an understanding of basic memory processes. He therefore decided to investigate a simpler experimental model, the nervous system of a sea slug, Aplysia. It has comparatively few nerve cells (around 20,000), many of which are rather large. It has a simple protective reflex that protects the gills, which can be utilized to study basic learning mechanisms.

Eric Kandel found that certain types of stimuli resulted in an amplification of the protective reflex of the sea slug. This strengthening of the reflex could remain for days and weeks and was thus a form of learning. He could then show that learning was due to an amplification of the synapse that connects the sensory nerve cells to the nerve cells that activate the muscle groups that give rise to the protective reflex.

Short and long term memory

Eric Kandel showed initially that weaker stimuli give rise to a form of short term memory, which lasts from minutes to hours. The mechanism for this “short term memory” is that particular ion channels are affected in such a manner that more calcium ions will enter the nerve terminal. This leads to an increased amount of transmitter
release at the synapse, and thereby to an amplification of the reflex. This change is due to a phosphorylation of certain ion channel proteins that is utilizing the molecular mechanism described by Paul Greengard.

A more powerful and long lasting stimulus will result in a form of long term memory that can remain for weeks. The stronger stimulus will give rise to increased levels of the messenger molecule cAMP and thereby protein kinase A. These signals will reach the cell nucleus and cause a change in a number of proteins in the synapse. The formation of certain proteins will increase, while others will decrease. The final result is that the shape of the synapse can increase and thereby create a long lasting increase of synaptic function. In contrast to short term memory, long term memory requires that new proteins are formed. If this synthesis of new proteins is prevented, the long term memory will be blocked but not the short term memory.

Synaptic plasticity, a precondition for memory

Eric Kandel thus demonstrated that short term memory, as well as long term memory in the sea slug is located at the synapse. During the 1990's he has also carried out studies in mice. He has been able to show that the same type of long term changes of synaptic function that can be seen during learning in the sea slug also applies to mammals.

The fundamental mechanisms that Eric Kandel has revealed are also applicable to humans. Our memory can be said to be “located in the synapses” and changes in synaptic function are central, when different types of memories are formed. Even if the road towards an understanding of complex memory functions still is long, the results of Eric Kandel have provided a critical building stone. It is now possible to continue and for instance study how complex memory images are stored in our nervous system, and how it is possible to recreate the memory of earlier events. Since we now understand important aspects of the cellular and molecular mechanisms which make us remember,
the possibilities to develop new types of medication to improve memory function in patients with different types of dementia may be increased.

Figure 4. A sea slug, Aplysia, has a simple nervous system and a gill withdrawal reflex that Eric Kandel has utilized to study learning and memory.
The figure shows a synapse that is affecting another synapse. Short term memory can be produced when a weak stimulus (thin arrows in the left lower part of the figure) is causing a protein phosphorylation of ion channels, which leads to a release of an increased amount of transmitter. For a long term memory to be created, a stronger and more long-lasting stimulus is required (bold arrows in the figure). This causes an increased level of the messenger molecule cAMP, which causes a further activation of protein kinases. They will phosphorylate different proteins and affect the cell nucleus, which in turn will issue orders regarding the synthesis of new proteins. This may lead to changes in the form and function of the synapse. The efficacy of the synapse can then be increased and more transmitter released.
Tasks 9.1.10

1. Read the text and try to name the person who carried on the Morgan's research as far as genetics was concerned

Thomas Hunt Morgan and His Legacy

by Edward B. Lewis

1995 Nobel Laureate in Physiology or Medicine

20 April 1998

Thomas Hunt Morgan was awarded the Nobel Prize in Physiology or Medicine in 1933. The work for which the prize was awarded was completed over a 17-year period at Columbia University, commencing in 1910 with his discovery of the white-eyed mutation in the fruit fly, *Drosophila*.

Morgan received his Ph. D. degree in 1890 at Johns Hopkins University. He then went to Europe and is said to have been much influenced by a stay at the Naples Marine Laboratory and contact there with A. Dohrn and H. Driesch. He learned the importance of pursuing an experimental, as opposed to descriptive, approach to studying biology and in particular embryology, which was his main interest early in his career. A useful account of Morgan's life and works has been given by G. Allen.

In 1928 he moved with several of his group to Pasadena, where he joined the faculty of the California Institute of Technology (or Caltech) and became the first chairman of its Biology Division. What factors were responsible for the successes that Morgan and his students achieved at Columbia University and how did these factors carry over to the Caltech era first under Morgan's, and later G.W. Beadle's leadership? It is convenient to consider three time periods:
Morgan and the Columbia Period (1910 to 1928)

Morgan attracted extremely gifted students, in particular, A.H. Sturtevant, C.B. Bridges, and H.J. Muller (Nobel Laureate, 1946). They were to discover a host of new laws of genetics, while working in the “Fly Room”, in the Zoology Department at Columbia.

Throughout their careers Morgan and these students worked at the bench. The investigator must be on top of the research if he or she is to recognize unexpected findings when they occur. Sturtevant has stated that Morgan would often comment about experiments that led to quite unexpected results: “they [the flies] will fool you every time”.

Morgan attracted funding for his research from the Carnegie Institution of Washington. That organization recognized the basic research character of Morgan's work and supported research staff members in Morgan's group, such as C.B. Bridges and Morgan's artist, Edith Wallace, who was also curator of stocks. The Carnegie grants required nothing more than an annual report from the investigators. Federal support had not yet started and although universities were able to finance costs associated with teaching they were usually unable to support basic research.

During the Columbia period Morgan was clearly in his prime. His style of doing science must have been of paramount importance. He was not afraid to challenge existing dogma. He had become dissatisfied, even skeptical, of the formalistic treatment that genetics had taken in the period between the rediscovery of Mendelism in 1901 and 1909. He ridiculed explanations of breeding results that postulated more and more hereditary factors without any way of determining what those factors were. He wanted to know what the physical basis of such factors might be. At that time it was generally assumed that chromosomes could not be the carriers of the genetic information. He wanted a suitable animal and chose *Drosophila*, because of its short life cycle, ease of culturing and high fecundity. Also, large numbers of flies could be reared inexpensively - an important factor during this period when there were very few funds available to
support basic research. Morgan was very thrifty when it came to purchasing laboratory
equipment and supplies - but, according to Sturtevant, generous in providing financial
help to his students. At the start of the work hand lenses were used. Only later did
Bridges introduce stereoscopic microscopes. Bridges also devised a standard agar-based
culture medium. Prior to that, flies were simply reared on bananas. In addition, Bridges
built the basic collection of mutant stocks, mapped virtually all of the genes and later, at
Caltech, drew the definitive maps of the salivary gland chromosomes. His enormous
research output may in part be attributed to his being a staff member of the Carnegie
Foundation with consequent freedom from teaching and other academic obligations.

Morgan's first attempts to find tractable mutations to study were quite
disappointing. Fortunately, he persevered and found the white-eyed fly. This led to his
discovery of sex-linked inheritance and soon with the discovery of a second sex-linked
mutant, rudimentary, he discovered crossing over.

Sturtevant has described how chromosomes finally came to be identified as the
carriers of the hereditary material. In a conversation with Morgan in 1911 about the
spatial relations of genes in the nucleus, Sturtevant, who was still an undergraduate,
realized that the sex-linked factors might be arranged in a linear order. He writes that he
went home and spent the night constructing a genetic map based on five sex-linked
mutations that by then had been discovered. In 1912 Bridges and Sturtevant identified
and mapped two groups of autosomal (not sex-linked) factors and a third such group
was identified by Muller in 1914. The four linkage groups correlated nicely with the
four pairs of chromosomes that Drosophila was known to possess. Proof that this
correlation was not accidental came when Bridges used the results of irregular
segregation of the sex chromosomes (or non-disjunction) to provide an elegant proof
that the chromosomes are indeed the bearers of the hereditary factors or genes as they
are now known. Bridges published this proof in 1916 in the first paper of volume I of
the journal Genetics.

Sturtevant often commented on Morgan's remarkable intuitive powers. Thus,
Sturtevant describes how after explaining some puzzling results to Morgan, Morgan
replied that it sounded like an inversion. Sturtevant went on to provide critical evidence, purely from breeding results, that inversions do occur; it was only later that inversions were observed cytologically.

It seems clear that Morgan was not only a stimulating person but one who recognized good students, gave them freedom and space to work, and inspired them to make the leaps of imagination that are so important in advancing science.

Morgan and the Caltech Period (1928 to 1942)

Morgan was invited by the astronomer, G.E. Hale, to chair a Biology Division at the California Institute of Technology (Caltech). Hale had conceived the idea of creating Caltech some years earlier and had already recruited R.A. Millikan (Nobel Laureate in Physics, 1923) and A.A. Noyes to head the Physics and Chemistry Divisions, respectively. According to Sturtevant, Morgan told his group at Columbia of Hale's invitation and of how it was not possible to say no to Hale. Morgan accepted and came to Caltech in 1928. He brought with him Sturtevant, who came as a full professor, Bridges, and T. Dobzhansky, who later became a full professor. In addition to Sturtevant and Dobzhansky, the genetics faculty consisted of E.G. Anderson and S. Emerson. J. Schultz, who like Bridges was a staff member of the Carnegie Institution of Washington, participated in the teaching of an advanced laboratory course in genetics.


Morgan was well known outside of the scientific community and attracted interesting people. Professor Norman Horowitz, who was a graduate student in the Biology Division during this period, tells me that he remembers Morgan giving a tour of the Biology Division to the well-known author, H.G. Wells.
J.R. Goodstein has described how the Rockefeller Foundation and private donors provided financial support to the Biology and other Divisions during this period. Such assistance was essential at that time, since Caltech is a private institution and received no support from the state or the federal government.

In the latter half of this period, Morgan returned to his interest in marine organisms and did not follow the newer developments in genetics. Instead it was largely Sturtevant who carried on the Morgan legacy as far as genetics was concerned. Sturtevant also allowed his graduate students considerable freedom to choose their thesis projects and to consult with him on those projects or indeed on any matter. I was fortunate to have been one such student, commencing in 1939. Sturtevant’s door was always open to students and faculty. I well remember Morgan coming to Sturtevant's office to discuss matters affecting the Division.

Sturtevant told us that the award of the Nobel Prize to Morgan in 1933 was an important factor in elevating the prestige and status of the Biology Division at the Institute. At the time, the only other Nobel Laureate at Caltech was Millikan. From 1942 to 1946, the Division was managed by a committee chaired by Sturtevant.

**Beadle and the Caltech Period (1946 to 1961)**

In 1946, Sturtevant and Linus Pauling (who was awarded Nobel Prizes in Chemistry, 1954, and Peace, 1962) persuaded Beadle, who was then Professor of Biology at Stanford University, to become chairman of the Biology Division. Beadle carried on the Morgan tradition of strongly supporting basic research and maintaining a stimulating intellectual atmosphere. During the early 1930s Beadle had been a National Research Fellow in the Division. He had collaborated with Sturtevant on a monumental study of inversions and together they wrote a textbook of genetics. He had collaborated also during that time with Sterling Emerson, and with E.G. Anderson. Beadle was clearly a part of the Morgan legacy.
Beadle received the Nobel Prize in Physiology or Medicine in 1958 for work carried out at Stanford University on the biochemical genetics of the bread mold, *Neurospora*. In his biographical memoir on Beadle, Horowitz (ref. 4) describes how, while postdoctoral fellows in the Biology Division, Beadle and Ephrussi decided to pursue an early discovery by Sturtevant; namely, that a diffusible substance must be involved in the synthesis of the brown eye pigment of *Drosophila*. Sturtevant had shown that the *vermilion* eye color mutation is non-autonomously expressed in flies that are mosaic for the *vermilion* mutation and its wild-type allele. Beadle and Ephrussi designed at Caltech a set of experiments, involving transplantation of larval imaginal eye discs, to study the *vermilion*-plus hormone, as they called the diffusible substance. They carried out these experiments in Paris in Ephrussi's laboratory. They were able to show that another eye color gene, *cinnabar*, lacks a *cinnabar*-plus substance and that the wild-type *vermilion* and *cinnabar* genes control sequential steps in a biochemical pathway leading to the brown eye pigment. Beadle correctly realized that the fungus *Neurospora* would provide better genetic material for exploring such pathways. Beadle and E. Tatum (co-winner with Beadle of the Nobel Prize) and colleagues at Stanford were then successful in dissecting the biochemical pathways that are involved in the synthesis of vitamins and many amino acids in that organism. The *Neurospora* findings opened a new era, now known as molecular genetics.

During Beadle's tenure as chairman, N.H. Horowitz, H.K. Mitchell, R.D. Owen, and R.S. Edgar were added to the faculty in genetics. [I had come as an instructor in 1946 before Beadle had arrived]. Horowitz and Mitchell had been associated with Beadle at Stanford and played major roles in developing the one-gene one-enzyme hypothesis that led to the award of the Nobel Prize to Beadle and Tatum.

Beadle was responsible for persuading Delbrück to return to Caltech as a full professor. Delbrück had not been offered an appointment at Caltech after his tenure in the Division in the 1930s as a post-doctoral fellow and had taken a faculty position at Vanderbilt University. Other appointments during Beadle's chairmanship that added strength in animal virology were R. Dulbecco (1975 Nobel Laureate), and M. Vogt.
Howard Temin was one of Dulbecco's graduate students and later a cowinner with Dulbecco of the Nobel Prize in 1975. R. Sperry (1981 Nobel Laureate) joined the faculty as a full professor in 1954 and continued his work on split brains that he had begun at the University of Chicago.

Basic research gradually became well supported financially by Federal Agencies commencing with the Office of Naval Research, the Atomic Energy Commission and finally by the National Institutes of Health and the National Science Foundation. Such support was essential to obtain the personnel, equipment and supplies needed by the new fields of molecular and microbial genetics which flourished and indeed flowered during Beadle’s chairmanship.

During this third period there were many postdoctoral research fellows in the Biology Division, including S. Benzer (Crafoord Prize in 1993), who was a postdoctoral fellow in Delbrück's group from 1949 to 1951, and was later recruited in 1967 as full professor. J. Weigle was a visiting professor and a valuable member of the Delbrück group. There were visits by F. Jacob (Nobel Laureate, 1965) and J. Watson (Nobel Laureate, 1962). B. McClintock returned in 1946 for a short visit, working with one of the graduate students, Jessie Singleton, perfecting a method of analyzing the chromosomes of Neurospora. Interestingly, R. Feynman, Caltech professor of physics (Nobel Laureate in Physics, 1965), spent part of an academic year working with R. Edgar and other members of the Delbrück group.

Beadle had remarkably versatile skills. He early abandoned his research on Neurospora in order to devote full time to being chairman. He was very successful in finding donors to endow postdoctoral fellowships and new buildings. The fellowships were often used to support visits by foreign scientists who otherwise would not have had been able to come to the USA. As in the previous period, teaching loads were kept light and much teaching was conducted in the form of seminars and journal clubs. The biology faculty was by and large a harmonious group and students were allowed considerable freedom to choose their professors. As one of a number of measures of the success of this atmosphere, the Nobel Prize in Physiology or Medicine was awarded to
Professors Delbrück, Dulbecco and Sperry, as already noted, and in my case as well, for work carried out in the Division under the leadership of Beadle.
1. LOOK THROUGTH THE LIST OF ALL NOBEL LAUREATES IN PHYSIOLOGY OR MEDICINE AND POINT OUT AMERICAN ONES. YOU MAY ALSO NAME THE YEARS WHEN THEY WERE AWARDED THEIR PRIZE AND WHAT FOR

All Nobel Laureates in Physiology or Medicine

The Nobel Prize in Physiology or Medicine has been awarded 101 times to 196 Nobel Laureates between 1901 and 2010.

2010
Robert G. Edwards

2009
Elizabeth H. Blackburn, Carol W. Greider, Jack W. Szostak

2008
Harald zur Hausen, Françoise Barré-Sinoussi, Luc Montagnier

2007
Mario R. Capecchi, Sir Martin J. Evans, Oliver Smithies

2006
Andrew Z. Fire, Craig C. Mello

2005
Barry J. Marshall, J. Robin Warren

2004
Richard Axel, Linda B. Buck

2003
Paul C. Lauterbur, Sir Peter Mansfield

2002
Sydney Brenner, H. Robert Horvitz, John E. Sulston
2001
Leland H. Hartwell, Tim Hunt, Sir Paul M. Nurse

2000
Arvid Carlsson, Paul Greengard, Eric R. Kandel

1999
Günter Blobel

1998
Robert F. Furchgott, Louis J. Ignarro, Ferid Murad

1997
Stanley B. Prusiner

1996
Peter C. Doherty, Rolf M. Zinkernagel

1995
Edward B. Lewis, Christiane Nüsslein-Volhard, Eric F. Wieschaus

1994
Alfred G. Gilman, Martin Rodbell

1993
Richard J. Roberts, Phillip A. Sharp

1992
Edmond H. Fischer, Edwin G. Krebs

1991
Erwin Neher, Bert Sakmann

1990
Joseph E. Murray, E. Donnall Thomas

1989
J. Michael Bishop, Harold E. Varmus

1988
Sir James W. Black, Gertrude B. Elion, George H. Hitchings
1987
Susumu Tonegawa

1986
Stanley Cohen, Rita Levi-Montalcini

1985
Michael S. Brown, Joseph L. Goldstein

1984
Niels K. Jerne, Georges J.F. Köhler, César Milstein

1983
Barbara McClintock

1982
Sune K. Bergström, Bengt I. Samuelsson, John R. Vane

1981
Roger W. Sperry, David H. Hubel, Torsten N. Wiesel

1980
Baruj Benacerraf, Jean Dausset, George D. Snell

1979
Allan M. Cormack, Godfrey N. Hounsfield

1978
Werner Arber, Daniel Nathans, Hamilton O. Smith

1977
Roger Guillemin, Andrew V. Schally, Rosalyn Yalow

1976
Baruch S. Blumberg, D. Carleton Gajdusek

1975
David Baltimore, Renato Dulbecco, Howard Martin Temin

1974
Albert Claude, Christian de Duve, George E. Palade
1973
Karl von Frisch, Konrad Lorenz, Nikolaas Tinbergen

1972
Gerald M. Edelman, Rodney R. Porter

1971
Earl W. Sutherland, Jr.

1970
Sir Bernard Katz, Ulf von Euler, Julius Axelrod

1969
Max Delbrück, Alfred D. Hershey, Salvador E. Luria

1968
Robert W. Holley, Har Gobind Khorana, Marshall W. Nirenberg

1967
Ragnar Granit, Haldan Keffer Hartline, George Wald

1966
Peyton Rous, Charles Brenton Huggins

1965
François Jacob, André Lwoff, Jacques Monod

1964
Konrad Bloch, Feodor Lynen

1963
Sir John Carew Eccles, Alan Lloyd Hodgkin, Andrew Fielding Huxley

1962
Francis Harry Compton Crick, James Dewey Watson, Maurice Hugh Frederick Wilkins

1961
Georg von Békésy

1960
Sir Frank Macfarlane Burnet, Peter Brian Medawar
1959
Severo Ochoa, Arthur Kornberg

1958
George Wells Beadle, Edward Lawrie Tatum, Joshua Lederberg

1957
Daniel Bovet

1956
André Frédéric Cournand, Werner Forssmann, Dickinson W. Richards

1955
Axel Hugo Theodor Theorell

1954
John Franklin Enders, Thomas Huckle Weller, Frederick Chapman Robbins

1953
Hans Adolf Krebs, Fritz Albert Lipmann

1952
Selman Abraham Waksman

1951
Max Theiler

1950
Edward Calvin Kendall, Tadeus Reichstein, Philip Showalter Hench

1949
Walter Rudolf Hess, Antonio Caetano de Abreu Freire Egas Moniz

1948
Paul Hermann Müller

1947
Carl Ferdinand Cori, Gerty Theresa Cori, née Radnitz, Bernardo Alberto Houssay

1946
Hermann Joseph Muller
1945
Sir Alexander Fleming, Ernst Boris Chain, Sir Howard Walter Florey

1944
Joseph Erlanger, Herbert Spencer Gasser

1943
Henrik Carl Peter Dam, Edward Adelbert Doisy

1942
No Nobel Prize was awarded this year. The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.

1941
No Nobel Prize was awarded this year. The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.

1940
No Nobel Prize was awarded this year. The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.

1939
Gerhard Domagk

1938
Corneille Jean François Heymans

1937
Albert von Szent-Györgyi Nagyrápolt

1936
Sir Henry Hallett Dale, Otto Loewi

1935
Hans Spemann

1934
George Hoyt Whipple, George Richards Minot, William Parry Murphy

1933
Thomas Hunt Morgan
1932
Sir Charles Scott Sherrington, Edgar Douglas Adrian

1931
Otto Heinrich Warburg

1930
Karl Landsteiner

1929
Christiaan Eijkman, Sir Frederick Gowland Hopkins

1928
Charles Jules Henri Nicolle

1927
Julius Wagner-Jauregg

1926
Johannes Andreas Grib Fibiger

1925
No Nobel Prize was awarded this year. The prize money was allocated to the Special Fund of this prize section.

1924
Willem Einthoven

1923
Frederick Grant Banting, John James Rickard Macleod

1922
Archibald Vivian Hill, Otto Fritz Meyerhof

1921
No Nobel Prize was awarded this year. The prize money was allocated to the Special Fund of this prize section.

1920
Schack August Steenberg Krogh
1919
Jules Bordet

1918
No Nobel Prize was awarded this year. The prize money was allocated to the Special Fund of this prize section.

1917
No Nobel Prize was awarded this year. The prize money was allocated to the Special Fund of this prize section.

1916
No Nobel Prize was awarded this year. The prize money was allocated to the Special Fund of this prize section.

1915
No Nobel Prize was awarded this year. The prize money was allocated to the Special Fund of this prize section.

1914
Robert Bárány

1913
Charles Robert Richet

1912
Alexis Carrel

1911
Allvar Gullstrand

1910
Albrecht Kossel

1909
Emil Theodor Kocher

1908
Ilya Ilyich Mechnikov, Paul Ehrlich
1907
Charles Louis Alphonse Laveran

1906
Camillo Golgi, Santiago Ramón y Cajal

1905
Robert Koch

1904
Ivan Petrovich Pavlov

1903
Niels Ryberg Finsen

1902
Ronald Ross

1901
Emil Adolf von Behring
APPENDIX 3

TASKS 9.3

1. WHAT DO YOU THINK ABOUT PARTICIPATION OF NOBEL LAUREATES IN SOLVING HEALTH PROBLEMS? DO A PROJECT “NOBEL LAUREATES IN MEDICINE MAKE THE WORLD HEALTHIER”

Some Possible Points to Clear up

1) What is the most interesting and useful discovery in medicine made by Nobel laureate?
2) Why do you think so?

2. ILLUSTRATE YOUR IDEAS WITH PICTURES, PHOTOS AND FILMS

3. CREATE A BLOG ON THE PROBLEM DISCUSSED

4. EXCHANGE YOUR OPINIONS ON THE BLOGS OF YOUR COURSE-MATES
AN INTERNET HOTLIST ON MEDICAL ENGLISH

Introduction
Medical universities around the world are teaching English. This hotlist is intended to help learners and teachers find useful material on the subject, and a variety of it.

The Internet Resources

Readings and Discussions

• BBC News / Health - Current articles on medicine that are very readable.
• Lists of Free Medical Newsletters - Here you can sign up to receive free newsletters on a number of medical/health related subjects.
• English Forums: Medicine – A question-and-answer forum on ESL and medicine.
• medschopdiary.com - If you want to know about the lives of med students, mostly from the USA, you can read 100s of journal entries here. Pretty cool.
• Medicine Through Time - This superb site for students has tons of information on the history of medicine-including online lessons, games, quizzes A great resource for teachers too.

Medical Dictionaries

• Ed’s Medical Terminology Page - Ed translates those medically common Greek and Latin roots into English.
• Medical Word Search - Look for the medical words in the word-search puzzle.
• Medicine Plus: Medical Dictionary - An online dictionary that will answer all your lexical questions.
• Multilingual Glossary of Medical Terms - This glossary offers both technical and popular words (examples: abdomen, gut), and it does so in 9 languages.
• Images from the History of Medicine Library - This searchable database has 60,000 images related to medicine and its history.
USEFUL ADDRESSES

American

American Medical Association
535 N Dearborn Street
Chicago IL 60610

American Academy of Family Physicians
1740 W 92nd Street
Kansas City MO 64114

American College of Physicians
4200 Pine Street
Philadelphia PA 19104

American College of Surgeons
55 E Erie Street
Chicago IL 60611

American Federation for Clinical Research
University of Washington
Children’s Orthopedic Hospital and Medical Center
PO Box C-5371 Seattle WA 98105
American Hospital Association
Intermountain Health Center Inc.
36 S State Street
Salt Lake City UT 84111

Educational Commission for Foreign Medical Graduates
3624 Market Street
Philadelphia PENN 19104-2685

Southern Medical Association
35 Lakeshore Drive
PO Box 63656 Bermingham AL 35219-0088
Unit X. FINAL ASSIGNMENTS

TASKS 10.1

1. DO THE FOLLOWING PROJECTS

Project “Health Care in the USA”
Project “Population and Treatment in the USA”
Project “Vaccination in the USA”
Project “Medicare Medicaid”
Project “Health Risk Factors of Modern America”
Project “Drugs as a Part of Therapy”
Project “Modern America Faces Some Medical Problems”
Project “Cooperation in Medicine can Help to Find the Way out”
Project “Nobel Laureates in Medicine Make the World Healthier”

2. DISCUSS YOUR PROJECT WITH YOUR GROUP-MATES

TASKS 10.2

1. CREATE A BLOG TO DISCUSS DISCOVERIES OF NOBEL LAUREATES IN MEDICINE

2. JOIN THE THEACHERS’ BLOG TO DISCUSS THE DISCOVERIES OF NOBEL LAUREATES IN MEDICINE (USA)

http://www.BLAGOVESCHENSK2011.blogspot.com
3. POST YOUR COMMENTS ON THE PROBLEM DISCUSSED TO THE BLOGS OF YOUR COURSE-MATES
Unit I. GENERAL DESCRIPTION OF HEALTH CARE IN THE USA

TASKS 1.1

Task 7

1) true; 2) false; 3) false; 4) true

Task 8

• в тексте нет информации

TASKS 1.3

Task 3

• ложным

Task 4

• 3

Task 5

1) true; 2) true; 3) true; 4) false

TASKS 1.4
Task 1

1) b; 2) a; 3) b; 4) b; 5) b

TASKS 1.5

Task 1

1) Most physicians have a contractual relationship with one or more hospitals in the community. They send their patients to this hospital, which usually charges patients according to the number of days they stay and the facilities— operating room, tests, medicines—that they use.

2) Physicians are among the best paid professionals in the United States. In the 1980s, it is not uncommon for medical doctors to earn incomes of more than $100,000 a year. Specialists, particularly surgeons, might earn several times that amount.

3) Most would be physicians first attend college for four years, which can cost nearly $20,000 annually at one of the best private institutions. Prospective physicians then attend medical school for four years. Tuition alone can exceed $10,000 a year. By the time they have obtained their medical, degrees, many young physicians are deeply in debt. They still face three to five years of residency in a hospital, the first year as an intern, an apprentice physician. The hours are long and the pay is relatively low.

4) Setting up a medical practice is expensive, too. Sometimes several physicians will decide to establish a group practice, so they can share the expense of maintaining an office and buying equipment.

5) Physicians work long hours and must accept a great deal of responsibility. Many medical procedures, even quite routine ones, involve risk.

Task 2
1) d; 2) c; 3) a; 4) f; 5) e; 6) b

TASKS 1.6

Task 1

1) yes; 2) yes; 3) yes; 4) no; 5) no

TASKS 1.7

Task 2

3, 5, 7

TASKS 1.8

Task 2

1) no; 2) no; 3) no; 4) yes; 5) yes

TASKS 1.9

Task 1

1) false; 2) false; 3) false; 4) true; 5) true; 6) true; 7) false; 8) false; 9) true; 10) true

Task 2

abortion, unconscious patients.
Unit II. POPULATION

TASKS 2.1

Task 1

<table>
<thead>
<tr>
<th>AGE YEARS</th>
<th>Total population</th>
<th>65 years of age and over</th>
<th>75 years of age and over</th>
<th>Under 18 years of age</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 1950 to 2000</td>
<td>Increased from million to 281 million</td>
<td>Increased from 12 to 35 million persons, increased from 6% to 7%</td>
<td>Increased from million person</td>
<td>Fell from 31% to 26%</td>
</tr>
<tr>
<td>From 2000 to 2050</td>
<td>Will increase from 7% to 9%</td>
<td>Will increase from 6% to 12%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TASKS 2.9

Task 3

a) • low costs of medical treatment abroad
• high quality healthcare abroad
• benefit of medical tourism for minor procedures
• lack of insurance
• receiving treatment anonymously
Unit III. VACCINATION

TASKS 3.1

Task 1

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>Disease</th>
<th>Age</th>
<th>Racial and ethnic groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>- annual influenza vaccination</td>
<td>pneumococcal disease</td>
<td>65 years and over</td>
<td>- non-Hispanic</td>
</tr>
<tr>
<td>- pneumococcal polysaccharide vaccination</td>
<td>bacterial disease</td>
<td></td>
<td>- Hispanic</td>
</tr>
<tr>
<td>- vaccine-preventable bacterial disease</td>
<td></td>
<td></td>
<td>- white adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Asian adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- black older adults</td>
</tr>
</tbody>
</table>

### Advantages
- can lessen the risk of illness
- subsequent complications
- decreased the rate of influenza
- improved medicare

TASKS 3.3

Task 2

1) c; 2) d; 3) b; 4) e; 5) a; 6) g; 7) f

TASKS 3.4
Task 2

Fx: “Pneumococcal vaccination and Risk of Acute Myocardial Infarction and Stroke in Men”

Task 3

1 (+); 2 (-); 3 (+); 5 (-); 6 (-)

TASKS 3.5

Task 2

1) c; 2) b; 3) a

TASKS 3.7

Task 3

• 4

Task 4

• в тексте нет информации

Task 5

1) false; 2) false; 3) true; 4) true
### TASKS 4.1

#### Task 1

<table>
<thead>
<tr>
<th>Prenatal care</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenatal care begins…</td>
<td>in the first trimester and continues thought pregnancy reduces the risk of maternal morbidity and poor birth outcomes.</td>
</tr>
<tr>
<td>Prenatal care includes…</td>
<td>- pregnancy outcome and long-term material health;</td>
</tr>
<tr>
<td></td>
<td>- pregnancy related medical conditions;</td>
</tr>
<tr>
<td></td>
<td>- providing health behavior advice;</td>
</tr>
<tr>
<td></td>
<td>- assessing the risk of poor pregnancy outcome.</td>
</tr>
</tbody>
</table>

The increases in the use of prenatal care… beginning in the first trimester are observed among mothers in all major racial and ethnic groups.

Ethnic differences the proportion of women receiving late or no prenatal care was higher among American, Indian or Alaska Nanive women, non Hispanic black women, and women of Mexican origin (6-8%).

### TASKS 5.1
### Task 2

| Correlation between smoking and diseases | - health disease;                                           |
|                                        | - stroke;                                                   |
|                                        | - lung cancer;                                              |
|                                        | - chronic lung diseases;                                    |
|                                        | - elevate the risk of miscarriage;                          |
|                                        | - premature delivery;                                       |
|                                        | - having a low-birth weight infant.                         |

| Smoking rates among people             | among high school students: 26%                            |
|                                        | among mothers: 11% during pregnancy.                       |

| Smoking rates among ethnic groups      | all racial and ethnic groups.                              |

### TASKS 5.2

### Task 2

| Benefits of regular physical activity  | - a reduced risk of premature mortality;                  |
|                                       | - reduced risk of coronary heart decease;                 |
|                                       | - diabetes;                                               |
|                                       | - colon cancer;                                            |
|                                       | - hypertention;                                            |
- osteoporosis;
- weight control;
- improves mental health conditions (depression and anxiety)

<table>
<thead>
<tr>
<th>Physical activity among high school students</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity in leisure - time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Men are more likely to be engaged in physical activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65 years</td>
<td>More physically inactive</td>
<td>7 age</td>
</tr>
</tbody>
</table>

TASKS 5.3

Task 2

1) types of disabilities | chronic physical, mental, emotional disorders
2) primary activity for preschool children | play
3) limitation in play | due to chronic conditions
4) classification of activity limitation | chronic physical, mental, emotional problem
5) differences between boys and girls activity limitation | limitation of activity occurred nearly twice as often among boys as among girls due to physiological, maturational, behavioral, and social differences among them
6) age differences in limitation among preschool children: (chronic conditions) - speech - asthma - mental retardation among all school age children: - learning disability - Attention Deficit Hyperactivity - speech problems

**TASKS 5.4**

**Task 2**

| The cause of limitation in everyday activities | - chronic physical | - mental | - emotional problems |
| Personal care needs (activities of daily living) | - routine needs | - having a job outside the home | - walking | - remembering | - other activities |
| Working activity on status | - poverty status |
| Conditions causing limitation of activity | - mental illness | - heart disease |

**TASKS 5.5**

**Task 2**

<table>
<thead>
<tr>
<th>Basic activities of daily living (ADL)</th>
<th>Additional aspects of disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>- bathing</td>
<td>- walking up steps</td>
</tr>
<tr>
<td>- dressing</td>
<td>- reaching arms overheard</td>
</tr>
<tr>
<td>- using the toilet</td>
<td>- ability to perform instrumental</td>
</tr>
<tr>
<td>- eating</td>
<td>- activities of daily living</td>
</tr>
<tr>
<td>- getting in (out) of bed (or chairs)</td>
<td>- shopping</td>
</tr>
<tr>
<td>- walking</td>
<td>- managing money</td>
</tr>
</tbody>
</table>
### Task 2

<table>
<thead>
<tr>
<th>Correlation between overweight and obesity and disease</th>
<th>Elevate the risk of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- heart disease</td>
</tr>
<tr>
<td></td>
<td>- diabetes some types of cancer</td>
</tr>
<tr>
<td></td>
<td>- hypertension</td>
</tr>
<tr>
<td></td>
<td>- arthritis</td>
</tr>
<tr>
<td></td>
<td>- musculoskeletal problems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measures against overweight and obesity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- diet</td>
</tr>
<tr>
<td></td>
<td>- physical activity</td>
</tr>
<tr>
<td></td>
<td>- potential health</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Results of National Health and nutrition Examination Surveys</th>
<th>Years</th>
<th>Age</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1960s and 1976-80 adults</td>
<td>changed little</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1988-94 1999-2002 adults</td>
<td>showed substantial increases in obesity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>children (6-11 years of age)</td>
<td>Overweight has also risen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adolescents (12-19 years of age)</td>
<td>(about 16%)</td>
<td></td>
</tr>
</tbody>
</table>

| Conclusion | Overweight and obesity are main causes of many diseases in all age groups |
Unit VI. MEDICINES

TASKS 6.1

Task 2

1) а; 2) а; 3) б; 4) в; 5) б

Task 3

6

Task 4

3

Task 5

3

Task 6

4

Task 7

1

Task 8
TASKS 6.2

Task 2

1) а; 2) б; 3) б; 4) в; 5) а

Task 3

Task 4

Task 5

Task 6

Task 7

Task 8
TASKS 6.3

Task 2

1) а; 2) б; 3) б; 4) в; 5) а

Task 3

2

Task 4

1

Task 5

3

Task 6

4

Task 7

4

Task 8

1

TASKS 6.4

Task 2
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Task 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) а; 2) б; 3) б; 4) а; 5) в</td>
<td></td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TASKS 6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) а; 2) а; 3) б; 4) в; 5) а</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Task 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TASKS 6.6

Task 2

1) б; 2) а; 3) б; 4) а; 5) в

Task 3

5

Task 4

3

Task 5

4

Task 6

3

Task 7
Task 8

Unit VII. PROBLEMS OF MODERN AMERICAN MEDICINE

TASKS 7.1

Task 2

<table>
<thead>
<tr>
<th>Features that influence on life expectancy</th>
<th>improvements in nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>housing</td>
</tr>
<tr>
<td></td>
<td>hygiene</td>
</tr>
<tr>
<td></td>
<td>medical care</td>
</tr>
<tr>
<td></td>
<td>prevention and control of infectious diseases</td>
</tr>
<tr>
<td></td>
<td>healthier lifestyle</td>
</tr>
<tr>
<td></td>
<td>better health before age 65 years</td>
</tr>
</tbody>
</table>

TASKS 7.4

Task 2

8, 4, 1

TASKS 7.5

Task 1
3) medical and health care

Task 2

3

TASKS 7.6

Task 1

1) Clark survived 112 days.
2) One of these patients, however, survived for nearly two years before dying in mid-1986.
3) For example, does the artificial heart offer enough benefits to patients to justify the suffering caused by such an operation?
4) However, both patients remained ill suffered strokes, or brain seizures, and other complications.
5) The artificial heart is a great achievement for modern medicine, but it also poses important questions that are at the center of the debate over the course of medical care in the United States.

Task 2

2.

TASKS 7.7

Task 2

<table>
<thead>
<tr>
<th>Health</th>
<th>Treatment</th>
<th>Results and</th>
<th>Full</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>problem</td>
<td>achievements</td>
<td>recovery</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Kidney trouble</td>
<td>Dialysis, cleansing of blood</td>
<td>-</td>
<td>No</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>Drugs</td>
<td>-</td>
<td>No</td>
</tr>
<tr>
<td>Abnormalities in heart rhythm</td>
<td>Heart regulators, cardiac peacemakers</td>
<td>-</td>
<td>No</td>
</tr>
<tr>
<td>Cancer</td>
<td>Surgery, drugs, radiation treatment</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Eyesight trouble</td>
<td>Laser technique</td>
<td>Preserve or restore eyesight</td>
<td>Yes</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>Tranquilizers, calming drugs</td>
<td>Release many patients from mental hospitals</td>
<td>No</td>
</tr>
</tbody>
</table>

Task 3

2

TASKS 7.8

Task 3

<table>
<thead>
<tr>
<th>functions of thyroid</th>
<th>causes of thyroid cancer</th>
<th>symptoms of thyroid cancer</th>
<th>treatment of thyroid cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyroid produces two hormones that help regulate the heart rate, blood pressure,</td>
<td>Radiation exposure, family history, increasing age and having too</td>
<td>Include a neck lump that can be seen or felt; persistent hoarseness, or</td>
<td>Surgery to remove all or part of the thyroid is the most common</td>
</tr>
</tbody>
</table>
body temperature and weight. much or too little iodine in the diet could increase the risk of this uncommon disease. difficulty speaking in a normal voice; enlarged lymph nodes; difficulty swallowing or breathing; pain in the throat or neck.

<table>
<thead>
<tr>
<th>Task 4</th>
<th>4 paragraph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 5</td>
<td></td>
</tr>
<tr>
<td>Task 6</td>
<td></td>
</tr>
<tr>
<td>1) true; 2) false; 3) true; 4) false</td>
<td></td>
</tr>
</tbody>
</table>

**TASKS 7.9**

<table>
<thead>
<tr>
<th>Task 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>trend of colon cancer</td>
</tr>
<tr>
<td>1.11 cases of colon cancer per 200,000 people</td>
</tr>
</tbody>
</table>
last 20 years (from 1973 to 2005); 0.42 cases of rectal cancer per 200,000 people

insufficient intake of vitamin D.

Task 4

4

Task 5

ложным

Task 6

1) true; 2) true; 3) true; 4) false

Part VIII. INTERNATIONAL COOPERATION IN MEDICINE

TASKS 8.1.

Task 1

1) c; 2) e; 3) f; 4) b; 5) d; 6) a

Task 2

1)
TASKS 8.2

Task 2

1) а; 2) в; 3) б; 4) а; 5) в

TASKS 8.3

Task 2

1) б; 2) а; 3) б; 4) а; 5) в

TASKS 8.4

Task 2

1) в; 2) б; 3) б; 4) а) 5) а

TASKS 8.5

Task 2

1) а; 2) а; 3) б; 4) в; 5) в

TASKS 8.6

Task 2

1) б; 2) а; 3) а; 4) б; 5) в

TASKS 8.7
### Task 2

1) в; 2) б; 3) а; 4) а; 5) б

### Unit IX. APPENDIX

#### TASKS 9.1

#### TASKS 9.1.1

#### Task 3

<table>
<thead>
<tr>
<th>Infertility was a medical and psychological problem</th>
<th>Infertility is not a medical and psychological problem (today)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- more than 10% of all couples worldwide where infertile;</td>
<td>in 1969, for the first time, a human egg was fertilized in a test tube;</td>
</tr>
<tr>
<td>- for many couples infertility was a great disappointment or lifelong psychological trauma;</td>
<td>in vitro fertilization is an established therapy now</td>
</tr>
<tr>
<td>- medicine had had limited opportunities to help infertiled individuals</td>
<td></td>
</tr>
</tbody>
</table>

#### TASKS 9.1.2

#### Task 1

<table>
<thead>
<tr>
<th>Name two main problems that were solved by Nobel laureates</th>
<th>1) – how the telomere functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2) – found the enzyme that copies it</td>
</tr>
</tbody>
</table>

#### Task 2
<table>
<thead>
<tr>
<th>Elizabeth H. Blackburn</th>
<th>Carol W. Yreider</th>
<th>Jack W. Szostak</th>
</tr>
</thead>
<tbody>
<tr>
<td>named the enzyme</td>
<td>discovered signs of</td>
<td></td>
</tr>
<tr>
<td>purified it, showed of RNA as well</td>
<td>enzymatic activity in cell extract</td>
<td></td>
</tr>
<tr>
<td></td>
<td>named the enzyme telomeranse, purified it, showed that it consists of RNA as well as protein</td>
<td></td>
</tr>
<tr>
<td>named mutation in RNA of the telomerase and observed similar effects in Tetrahymena</td>
<td>showed that senescence of human cells is also delayed by telomerase</td>
<td>identified yeast cells with mutation that led to a gradual shortening of telomeres</td>
</tr>
</tbody>
</table>

Task 3

The role of the discovery in medicine

| - | fundamental mechanism in cell |
| - | the development of new therapeutic strategies |

TASKS 9.1.3

Task 1

E

TASKS 9.1.4

Task 1

- treatment for virus infection;
- cardiovascular disease;
- cancer;
- endocrine disorders;
- and several other conditions.

**TASKS 9.1.5**

**Task 1**

1) Yes, there are. Because every single olfactory receptor cell expresses only one of the odorant receptor genes.
2) Approximately 10,000 different odours.
3) For life quality.

**TASKS 9.1.6**

**Task 1**

1. – A, B
2. – C, D, E

**TASKS 9.1.7**

**Task 1**

A, D, G.

**TASKS 9.1.8**

**Task 1**

New principles for cancer Therapy
New achievements concern

1) Parkinson’s disease;
2) Slow synaptic transmission;
3) Short and long term memory.

• THOMAS HUNT MORGAN 1933 Nobel Laureate in Medicine for his discoveries concerning the role played by the chromosome in heredity.
• GEORGE HOYT WHIPPLE 1934 Nobel Laureate in Medicine for their discoveries concerning liver therapy in cases of anaemia.
• EDWARD ADELBERT DOISY 1943 Nobel Laureate in Medicine for his discovery of the chemical nature of vitamin K.
• JOSEPH ERLANGER 1944 Nobel Laureate in Medicine for their discoveries relating to the highly differentiated functions of single nerve fibres.
• HERMANN JOSEPH MULLER 1946 Nobel Laureate in Medicine
for the discovery of the production of mutations by means of X-ray irradiation.
• CARL FERDINAND CORI 1947 Nobel Laureate in Medicine
• GERTY THERESA CORI 1947 Nobel Laureate in Medicine
for their discovery of the course of the catalytic conversion of glycogen
• EDWARD CALVIN KENDALL 1950 Nobel Laureate in Medicine
for their discoveries relating to the hormones of the adrenal cortex, their structure and biological effects.
• PHILIP SHOWALTER HENCH 1950 Nobel Laureate in Medicine
for their discoveries relating to the hormones of the adrenal cortex, their structure and biological effects.
• MAX THEILER 1951 Nobel Laureate in Medicine
for his discoveries concerning yellow fever and how to combat it.
• SELMAN ABRAHAM WAKSMAN 1952 Nobel Laureate in Medicine
for his discovery of streptomycin, the first antibiotic effective against tuberculosis.
• FRITZ ALBERT LIPMANN 1953 Nobel Laureate in Medicine
for his discovery of co-enzyme A and its importance for intermediary metabolism.
• JOHN FRANKLIN ENDERS 1954 Nobel Laureate in Medicine
• THOMAS HUCKLE WELLER 1954 Nobel Laureate in Medicine
• FREDERICK CHAPMAN ROBBINS 1954 Nobel Laureate in Medicine
for their discovery of the ability of poliomyelitis viruses to grow in cultures of various types of tissue.
• ANDRÍÍ FRÝÐÝRÍC COURNAND 1956 Nobel Laureate in Medicine
• DICKINSON W. RICHARDS 1956 Nobel Laureate in Medicine
for their discoveries concerning heart catheterization and pathological changes in the circulatory system.
• JOSHUA LEDERBERG 1958 Nobel Laureate in Medicine
for his discoveries concerning genetic recombination and the organization of the genetic material of bacteria.
• GEORGE WELLS BEADLE 1958 Nobel Laureate in Medicine
for their discovery that genes act by regulating definite chemical events
• EDWARD LAWRIE TATUM 1958 Nobel Laureate in Medicine
• SEVERO OCHOA 1959 Nobel Laureate in Medicine
• ARTHUR KORNBERG 1959 Nobel Laureate in Medicine
for their discovery of the mechanisms in the biological synthesis of ribonucleic acid and deoxiribonucleic acid.
• GEORG VON BŐKÜSY 1961 Nobel Laureate in Medicine
for his discoveries of the physical mechanism of stimulation within the cochlea.
• JAMES DEWEY WATSON 1962 Nobel Laureate in Medicine
for their discoveries concerning the molecular structure of nuclear acids and its significance for information transfer in living material.
• KONRAD BLOCH 1964 Nobel Laureate in Medicine
for their discoveries concerning the mechanism and regulation of the cholesterol and fatty acid metabolism.
• CHARLES BRENTON HUGGINS 1966 Nobel Laureate in Medicine
for his discoveries concerning hormonal treatment of prostatic cancer.
• PEYTON ROUS 1966 Nobel Laureate in Medicine
for his discovery of tumor inducing viruses
• HALDAN KEFFER HARTLINE 1967 Nobel Laureate in Medicine
• GEORGE WALD 1967 Nobel Laureate in Medicine
for their discoveries concerning the primary physiological and chemical visual processes in the eye.
• ROBERT W. HOLLEY 1968 Nobel Laureate in Medicine
• HAR GOBIND KHORANA 1968 Nobel Laureate in Medicine
• MARSHALL W. NIRENBERG 1968 Nobel Laureate in Medicine
for their interpretation of the genetic code and its function in protein synthesis.
• MAX DELBRÜCK 1969 Nobel Laureate in Medicine
• ALFRED D. HERSHEY 1969 Nobel Laureate in Medicine
• **SALVADOR E. LURIA** 1969 Nobel Laureate in Medicine
  for their discoveries concerning the replication mechanism and the genetic structure of viruses.

• **JULIUS AXELROD** 1970 Nobel Laureate in Medicine
  for their discoveries concerning the humoral transmitters in the nerve terminals and the mechanism for their storage, release and inactivation.

• **EARL W. JR. SUTHERLAND** 1971 Nobel Laureate in Medicine
  for his discoveries concerning the mechanisms of the action of hormones.

• **GERALD M. EDELMAN** 1972 Nobel Laureate in Medicine
  for their discoveries concerning the chemical structure of antibodies.

• **CHRISTIAN DE DUVE** 1974 Nobel Laureate in Medicine

• **GEORGE E. PALADE** 1974 Nobel Laureate in Medicine
  for their discoveries concerning the structural and functional organization of the cell.

• **DAVID BALTIMORE** 1975 Nobel Laureate in Medicine

• **HOWARD MARTIN TEMIN** 1975 Nobel Laureate in Medicine
  for their discoveries concerning the interaction between tumour viruses and the genetic material of the cell.

• **BARUCH S. BLUMBERG** 1976 Nobel Laureate in Medicine

• **D. CARLETON GAJDUSEK** 1976 Nobel Laureate in Medicine
  for their discoveries concerning new mechanisms for the origin and dissemination of infectious diseases.

• **ROSALYN YALOW** 1977 Nobel Laureate in Medicine
  for the development of radioimmunoassays of peptide hormones.

• **ROGER GUILLEMIN** 1977 Nobel Laureate in Medicine

• **ANDREW V. SCHALLY** 1977 Nobel Laureate in Medicine
  for their discoveries concerning the peptide hormone production of the brain

• **DANIEL NATHANS** 1978 Nobel Laureate in Medicine

• **HAMILTON O. SMITH** 1978 Nobel Laureate in Medicine
for the discovery of restriction enzymes and their application to problems of molecular genetics.

• **ALAN M. CORMACK** 1979 Nobel Laureate in Medicine
  for the development of computer assisted tomography.

• **BARUJ BENACERRAF** 1980 Nobel Laureate in Medicine
• **GEORGE D. SNELL** 1980 Nobel Laureate in Medicine
  for their discoveries concerning genetically determined structures on the cell surface that regulate immunological reactions.

• **DAVID H. HUBEL** 1981 Nobel Laureate in Medicine
• **TORSTEN N. WIESEL** 1981 Nobel Laureate in Medicine
  for their discoveries concerning information processing in the visual system.

• **ROGER W. SPERRY** 1981 Nobel Laureate in Medicine
  for his discoveries concerning the functional specialization of the cerebral hemispheres.

• **BARBARA MCCLINTOCK** 1983 Nobel Laureate in Medicine
  for her discovery of mobile genetic elements.

• **MICHAEL S. BROWN** 1985 Nobel Laureate in Medicine
• **JOSEPH L. GOLDSTEIN** 1985 Nobel Laureate in Medicine
  for their discoveries concerning the regulation of cholesterol metabolism.

• **STANLEY COHEN** 1986 Nobel Laureate in Medicine
• **RITA LEVI-MONTALCINI** 1986 Nobel Laureate in Medicine
  for their discoveries of growth factors.

• **SUSUMU TONEGAWA** 1987 Nobel Laureate in Medicine
  for his discovery of the genetic principle for generation of antibody diversity.

Affiliation: Massachusetts Institute of Technology MIT, Cambridge, MA, U.S.A.

• **GERTRUDE B. ELION** 1988 Nobel Laureate in Medicine
• **GEORGE H. HITCHINGS** 1988 Nobel Laureate in Medicine
  for their discoveries of important principles for drug treatment.

• **MICHAEL BISHOP** 1989 Nobel Laureate in Medicine
• **HAROLD E. VARMUS** 1989 Nobel Laureate in Medicine
for their discovery of the cellular origin of retroviral oncogenes.

- **JOSEPH E. MURRAY** 1990 Nobel Laureate in Medicine
- **E. DONNALL THOMAS** 1990 Nobel Laureate in Medicine

for their discoveries concerning organ and cell transplantation in the treatment of human disease.

- **EDMOND H. FISCHER** 1992 Nobel Laureate in Medicine
- **EDWIN G. KREBS** 1992 Nobel Laureate in Medicine

for their discoveries concerning reversible protein phosphorylation as a biological regulatory mechanism.

- **PHILLIP A. SHARP** 1993 Nobel Laureate in Medicine

for discovery of split genes.

- **ALFRED G. GILMAN** 1994 Nobel Laureate in Medicine
- **MARTIN RODBELL** 1994 Nobel Laureate in Medicine

for discovery of G-proteins and the role of these proteins in signal transduction in cells.

- **EDWARD B. LEWIS** 1995 Nobel Laureate in Medicine
- **ERIC F. WIESCHAUS** 1995 Nobel Laureate in Medicine

for discoveries concerning the genetic control of early embryonic development.

- **PETER C. DOHERTY** 1996 Nobel Laureate in Medicine
- **ROLF M. ZINKERNAGEL** 1996 Nobel Laureate in Medicine
- **STANLEY B. PRUSINER** 1997 Nobel Laureate in Medicine

for his discovery of Prions - a new biological principle of infection.

- **ROBERT F. FURCHGOTT** 1998 Nobel Laureate in Medicine
- **LOUIS J. IGNARRO** 1998 Nobel Laureate in Medicine
- **FERID MURAD** 1998 Nobel Laureate in Medicine

for his discovery concerning nitric oxide as a signalling molecule in the cardiovascular system.

- **GÜNTER BLOBEL** 1999 Nobel Laureate in Physiology or Medicine

for the discovery that proteins have intrinsic signals that govern their transport and localization in the cell.
• PAUL GREENGARD 2000 Nobel Laureate in Physiology or Medicine
  for their discoveries concerning signal transduction in the nervous system
• ERIC KANDEL 2000 Nobel Laureate in Physiology or Medicine
• LELAND H. HARTWELL 2001 Nobel Laureate in Physiology or Medicine
  for their discoveries of "key regulators of the cell cycle."
• SY H. ROBERT HORVITZ 2002 Nobel Laureate in Physiology or Medicine
• DNEY BRENNER 2002 Nobel Laureate in Physiology or Medicine
  for their discoveries concerning genetic regulation of organ development and
  programmed cell death
• PAUL C. LAUTERBUR 2003 Nobel Laureate in Physiology or Medicine
  for their discoveries concerning magnetic resonance imaging
• RICHARD AXEL 2004 Nobel Laureate in Physiology or Medicine
• LINDA B. BUCK 2004 Nobel Laureate in Physiology or Medicine
  for their discoveries of odorant receptors and the organization of the olfactory system
• ANDREW Z. FIRE 2006 Nobel Laureate in Physiology or Medicine
• CRAIG C. MELLO 2006 Nobel Laureate in Physiology or Medicine
  for their discovery of RNA interference - gene silencing by double-stranded RNA
• MARIO R. CAPECCHI 2007 Nobel Laureate in Physiology or Medicine
• OLIVER SMITHIES 2007 Nobel Laureate in Physiology or Medicine
  for their discoveries of principles for introducing specific gene modifications in mice by
  the use of embryonic stem cells
• ELIZABETH H. BLACKBURN 2009 Nobel Laureate in Physiology or Medicine
• CAROL W. GREIDER 2009 Nobel Laureate in Physiology or Medicine
• JACK W. SZOSTAK 2009 Nobel Laureate in Physiology or Medicine
  for the discovery of how chromosomes are protected by telomeres and the enzyme
  telomerase.
ЗАКЛЮЧЕНИЕ

Данное пособие составлено коллективом преподавателей кафедры иностранных языков Амурской государственной медицинской академии. В основу пособия положены принципы гуманизации и гуманитаризации высшего медицинского образования и практическое владение иностранным языком, способствующее приобщению медиков к мировой культуре, установлению деловых связей, повышению собственного уровня культуры, речевого поведения и развитию мышления.
Владение иностранным языком является обязательным компонентом профессиональной подготовки современного конкурентоспособного специалиста любого профиля. Способность самостоятельно совершенствовать иноязычные речевые умения является важной для человека, живущего в условиях современного мира. Программа по иностранному языку ставит особую цель - развить у студента навыки самостоятельного изучения иностранного языка во время его обучения в вузе. Способность к самообучению, к самооценке, к самообразованию, к саморазвитию является интегративной частью всех умений, формирование и совершенствование которых включены в задачу Программы по иностранным языкам.

Для выполнения данной задачи основными организационными формами обучения являются аудиторные занятия под руководством преподавателя. Применяются также и другие формы занятий, способствующие достижению целей Программы:

1) обязательная самостоятельная работа студентов по заданию преподавателя, выполняемая на занятии;

2) обязательная самостоятельная работа, выполняемая по заданию преподавателя во внеаудиторное время, планируемая или самими студентами, или с преподавателем;

3) самостоятельная работа в малых группах при текущем контроле со стороны преподавателя;

4) индивидуальные консультации для студентов под руководством преподавателя во время выполнения заданий для самостоятельной работы;

5) подготовка и выступление с докладами по проблемам медицины на конференциях, проводимых на кафедрах иностранных языков;

6) индивидуальная работа студентов в лингафонных кабинетах, в читальном зале, в библиотеке;
7) внеаудиторная работа студентов во время общения с носителями языка на конференциях, симпозиумах, форумах (работа в качестве переводчиков), в Интернете и т.п.

При дифференцированном подходе к обучению иностранному языку обучающийся может в дальнейшем продолжить изучение иностранного языка самостоятельно.

REFERENCES


