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Кафедра общественного здоровья, организации и экономики здравоохранения Института непрерывного образования

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Общественное здоровье: организация здравоохранения и экономика здравоохранения

Public Health: Organization of Health Care Services and Health Economics

Учебное пособие

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The study manual in the course «Public Health, Health Care and Health Care Economics» for the 4th year international medical students in topics «Organization of Health Care Services and Health Economics».

Study manual is designed for international medical students, receiving undergraduate training in qualification 31.05.01 (Medical Doctor), who continue to study Public Health in the 2nd semester of the 4th year. The manual includes topic plan of practical classes in Organization of Health Care Services and Health Economics. Every topic contains importance of the topic and purpose of self-preparation, plan of studying the topic, questions for self-control, situational tasks and tests in the form of multiple-choice questions, essential information to study, recommended sources of literature. The manual will be useful for medical students studying in English medium as well as for the teachers of Public Health of medical universities giving lectures and practical classes for international students studying Public Health and Health Economics, for all who are interested in the topic.

Учебное пособие по дисциплине «Общественное здоровье и здравоохранение, экономика здравоохранения» для студентов 4 курса, обучающихся по направлению профессиональной подготовки «лечебное дело» на английском языке, включающее разделы «Организация здравоохранения» и «Экономика здравоохранения»

Учебное пособие предназначено для иностранных студентов медицинских вузов, обучающихся по направлению профессиональной подготовки «лечебное дело», продолжающих изучать дисциплину «Общественное здоровье и здравоохранение, экономика здравоохранения» во 2-ом семестре 4 курса. Пособие включает тематический план практических занятий по разделам дисциплины «Организация здравоохранения» и «Экономика здравоохранения». Методическая разработка каждой темы включает актуальность изучения материала, цель самоподготовки, план изучения темы, вопросы для самоподготовки, перечень рекомендуемой литературы, примерные тестовые задания и ситуационные задачи, учебная информация для запоминания. Представлены методические указания к выполнению самостоятельной работы. Рекомендуется для студентов направлений подготовки 31.05.01, преподавателей общественного здоровья и здравоохранения, экономики здравоохранения, а также l для всех, интересующихся данной тематикой.

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Introduction

Dear students!

The course of Public Health, Health Care and Health Economics is compulsory for studying at undergraduate level for all medical students. The subject is taught for two semesters. In the first part of the course students get acquainted with methodological basis of the discipline, learn Biostatistics, Epidemiology and main theoretical principles of Public Health. In the second semester the purpose of the subject is to introduce students to Public Health practice, to master skills in development of intervention programs in Public Health, making economic analysis for decision-making in Public Health policy. Students learn to apply statistical and epidemiological data for interpreting Public Health problems, prioritization of the essential tasks and management of Health Care systems and medical organizations.

The manual consists of 9 topics of the subject studied in the 2nd semester. Each topic includes the importance of the topic and purpose of self-preparation, plan of studying the topic, questions for self-control, situational tasks and tests in the form of multiple-choice questions, essential information to study, recommended sources of literature. In questions of the tests the first answer is a correct one. For some tasks the sample of answer is given.

The manual is developed by authors who have been teaching Public Health and Health Economics for international and Russian medical students for more than 20 years. So the most important information for effective studying of Public Health is selected and organized in this book.

We hope the manual will be helpful for students who are interested in clinical medicine, Public Health, Health Economics, Health Care Management, Sociology of Health and Disease, allied medical fields. We wish you success in studying this interesting and very challenging discipline, and we are sure that the more you study Public Health the more you will get fascinated by this subject. If you get knowledge and skills in Public Health you will be able to contribute a lot to the health of communities of your countries. This is our main mission and we believe it will be realized successfully.

Authors

Topic plan of practical classes in «Organization of Health Care Services. Health Economics»

№	Topic	Hours
1.	Health care system. Primary medical care organization and its place in Public Health. Medical institutions providing primary health care. Peculiarities of out-patient service organization. The role of a family doctor (GP) in health care.	4
2.	Hospital care organization: types and levels of hospitals, the leading causes of admission to hospital. Statistical measures of hospital activity. Alternatives to in-patient care.	4
3.	Maternal and child care. Organization and analysis of obstetrical-gynecological service. Evaluation of quality of medical care.	4
4.	Epidemiology of main non-communicable diseases. Designing of intervention programs at community level on control of non-communicable diseases. Main medical-social problems in different countries.	4
5.	Epidemiology of the selected communicable diseases, strategies of prophylaxis and control of infections. Surveillance and notification systems. Eradication and control strategies of main most prevalent infections. Factors of successful immunization programs.	4
6.	National health care systems – National Health Service (British), health insurance model (German), private system (USA), public system (Scandinavian), National Health Insurance (Canada), Semashko model (Soviet); their advantages and disadvantages. National health care systems in developing countries of Asia, Africa, Latin America.	4
7.	Basics of Health Economics. Macroeconomics of health care and microeconomics of a medical institution. Methods of economic evaluation in public health: cost-benefit, cost-effectiveness and cost-utility analysis. Assessment of burden of diseases by DALYs, QALYs.	4
8.	Microeconomics of health care institutions. Methods of payment to physicians and reimbursement of hospitals for medical services in different Health care systems. Break-even point and profit in medical institutions. Marketing of medical services in commercial and public sectors.	4
9.	Health care management in public health: centralized and decentralized systems. Management in a medical institution. Functions of management. Quality control of health care services.	4
	Total	36

Topic 1.
Health care system. Primary medical care organization and its place in Public Health

Importance of the topic

Health care system is the organization of people, institutions, and resources that deliver health care services to meet the health needs of target populations. Primary medical care is the first level of contact between the individual and the health care system but its accessibility and quality to a large extent determines community health and satisfaction of people with medical services. Students after graduating from the university will take positions in different medical institutions so they need to know the peculiarities of organization and structure of medical institutions providing primary medical care.

Importance of understanding the role of primary care for health care system is so large because the majority of prevailing health problems can be well successfully managed at primary level. Primary care providers are the key professionals of any health care system. Family doctor's practice is a very effective form of health care organization. Nowadays the primary health care strategy must be adapted to new health problems like COVID epidemics or increase of number of patients with chronic diseases, to demographical changes like population ageing, and national health care policies.

Purpose of self-preparation:

To study the peculiarities of primary medical care organization in Russia and abroad, to be able to analyse the indicators of work of out-patient institutions.

Plan of studying the topic

1. Components of Health Care system and health care providers.
2. The place of primary medical care in Health Care system.
3. Characteristics of out-patient care: principles, components, criteria for evaluation.
4. Core activities for primary health care.
5. WHO strategies of primary health care.
6. The Basic Requirements for sound primary health care.
7. Providers of primary medical care. Areas of general practice.
5. Ambulance system: organization in Russia and abroad.
6. The system of district doctors and family doctors: characteristics, advantages and disadvantages.
8. Polyclinics as a leading out-patient institution of primary care: definition, kinds, functions, tasks, providers of medical services.
9. Structure and organisational principles of polyclinics.
10. Statistical measures of out-patient services.

Questions for self-control:

1. What is health care system?
2. What are the levels of health care system?
3. What is the difference between medical care and health care?
4. Give the classification of medical institutions.
5. What is the meaning of comprehensive health services continuum?
6. What is the role of primary care in health care policy?
7. What is primary health care?
8. What are the principles for primary health care?
9. What are core activities for PHC?
10. What are the WHO strategies for development of primary health care services in national health care policy?
11. What are the basic requirements for primary health care?
12. What are the areas of general medical practice?
13. What does the work of a general practitioner include?
14. What are the functions of a district doctor?
15. What is the schedule of work of primary care doctors?
16. What are the advantages and disadvantages of territory principle of work in primary care practice?
17. What is the role of a family doctor in the system of primary medical care?
18. What are the necessary facilities for effective primary care practice?
19. In what countries is the system of primary care well-developed?
20. Characterize the organization of work of polyclinics.
21. What are the kinds of polyclinics?
22. What are the tasks of polyclinics?
23. What is the structure of polyclinics?
24. What are statistical indicators used to evaluate the work of out-patient institutions?
25. What are the norms of physicians' supply in out-patient practice?
26. What are the countries with the highest ratio of doctors?
27. What are the peculiarities of ambulance organization in Russia and abroad?

Information to remember!

Out-patient service has the main unit of measurement – a visit, which can be primary or repeated. Statistics is summarized on total number of visits for each patient's case differentiated by diagnosis, annual number of visits per a person registered with a primary care doctor, average number of visits to 1 physician per a day, average number of home visits to 1 physician per a day, incidence and prevalence rates by classes of diseases, distribution of people registered with a primary care physician by health groups, coverage by immunization, coverage with preventive check-ups, mortality by causes of death, incidence of permanent disability cases by causes, average duration of a medical leaf according to medical certificate of temporary disability.

Examples of tests

Select one correct answer.

PRINCIPLES OF ORGANIZATION OF POLYCLINICS ARE

easy accessibility
prioritized specialized services
antirabic activities
expertise of permanent disability
PRINCIPLES OF ORGANIZATION OF POLYCLINICS ARE
district doctors as main providers of services
low cost of care
supply of in-patient services
supply of forensic medical services
PRIMARY MEDICAL CARE IS PROVIDED BY
family planning centres
institutions of medical-social expertise
research institutes of health
oncologic hospitals
PRIMARY MEDICAL CARE IS PROVIDED BY
out-patient clinics
specialized hospitals
medical universities
ophthalmological clinics
PROVIDERS OF PRIMARY MEDICAL CARE INCLUDE
general practitioners (GP)
chief doctors of general hospitals
neurologists
rheumatologists
THE MAIN TASK OF A GENERAL PRACTITIONER IS
to treat the most common diseases
to treat rare renal pathology
to refer patients to other specialists
to provide operational activity
THE MAIN TASK OF A GENERAL PRACTITIONER IS
to prevent and diagnose the most common diseases
to provide safe childbirth
to treat dental diseases
to provide services by telecommunication technologies
THE MAIN TASK OF A GENERAL PRACTITIONER IS
to preserve and improve health of population registered for primary medical care
to serve more out-patient visits
to refer more patients for diagnostic tests
to refer more patients for hospital treatment
PROVIDERS OF PRIMARY CARE SERVICES ARE
family doctors and general practitioners
cardiologists and neurologists
ENT doctors and ophthalmologists
psychiatrists
POLYCLINICS ALWAYS HAS IN ITS STRUCTURE

diagnostic unit
hospital
emergency department
pathologo-anatomical unit
SPECIALISTS OF POLYCLINICS INCLUDE:
cardiologist, ophthalmologist, neurologist, traumatologist
internists
family doctors
general practitioners
PROVIDERS OF MEDICAL SERVICES ARE
licensed medical institutions
pharmacies
public health authorities
insurance companies
INDIVIDUAL NORMS OF WORK LOAD OF THE PHYSICIANS EMPLOYED IN OUT-PATIENT CLINICS ARE DETERMINED BY
chief of the medical institution
Public health law
accounting office of the medical institution
local Public Health authorities
THE FIRST CONTACT OF POPULATION WITH HEALTH CARE SERVICE IS CALLED
primary medical service
emergent care
home care
out-patient care
maternal care
THE STATISTICAL MEASUREMENT OF OUT-PATIENT SERVICE IS
a visit
a case of a disease
a patient
a test
CONTACT OF A PATIENT WITH A DOCTOR OF OUT-PATIENT CLINIC, RECORDED IN THE MEDICAL DOCUMENT IS CALLED
a visit
a medical service
an out-patient service
a meeting
PREVENTIVE VISITS INCLUDE
visits for screening tests
emergent visits
visits to ambulance with acute trauma
supply of specialized service
PREVENTIVE VISITS INCLUDE
monitoring of healthy infants of the first year of life

visits of children with disability
visits to ambulance with acute trauma
supply of specialized service
INSTITUTIONS OF PRIMARY MEDICAL care
rural dispensaries / feldsher's medical offices
specialized hospitals
schools and kindergartens
clinics of medical schools and universities
TYPES OF POLYCLINICS ACCORDING TO THE PROFILE
stomatologic, ophthalmologic
regional, district, municipal
private, public
for children or adults

Situational tasks

Task №1

Analyze the work of a district outpatient clinics in the year 2022 using data given in table 1.

Table 1

Statistical data of a district outpatient clinics in the year 2022

Statistical indicator	N
Mid-year district population	18 450
Number of working physicians	62
Number of working nurses	125
Number of outpatient visits in the year including home visits	129 082 20 240
Number of preventive visits	35 940
Number of out-patient visits per a day per 1 physician	27
Number of working hours per a day per 1 physician	6
Number of people who had a preventive medical check-up	1445
Number of people eligible for medical check up	1720
Number of patients with chronic diseases under dispensary observation	8195
Number of patients with chronic pulmonary diseases under dispensary observation by the end of the year	1100
Number of patients with chronic pulmonary diseases by the end of the year	1709
New cases of chronic pulmonary diseases detected in a year	156
Number of new cases taken for dispensary observation in a year	140
Number of followed-up patients with chronic pulmonary diseases who had - Improvement - No changes - Deterioration	 187 860 53
Number of newly detected cases in all classes of ICD	45 735

Number of annual working out-patient hours by plan per 1 physician	1 200
Number of annual working hours at home visits by plan per 1 physician	600
Number of actual working hours per 1 physician per a year in out-patient practice	1120
Number of actual working hours per 1 physician per a year at home visits	540

Task №2

Out-patient general practitioner Dr. Ivanova O. in a clinic has 2 300 patients registered in the list for primary care. The total number of out-patient visits in the last month was 675, including 350 visits for treatment purpose, 90 – for preventive service and 235 – home visits.

Calculate and characterize the received figures from public health prospective:

a) structure of visits by the reason for seeking the service in general medical practice

b) average number of visits physician serves per a day if there were 22 working days in the studied month

c) average number of visits per 1 registered person in the list of a GP.

Task №3

1. Draw a scheme of the organizational structure of any out-patient institution (polyclinics). Show the units and departments of the institution.
2. Patient Ivanov S. visits a primary care doctor with the complaints that show at diagnosis of rheumatoid arthritis. Show the scheme of patient's communication with health care system.

Recommended lliterature:

1. Review in Community Medicine // V.V.R.Sechu Babu, 2nd ed., 1996, Paras Medical Books. P.123-151.
2. Preventive Medicine and Public Health // Brett J. Cassens, 2nd ed., 1992, Harwal. P.385-410, 365-384.
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4. World Health Organization and United Nations Children's Fund. A vision for primary health care in the 21st century: towards universal health coverage and the Sustainable Development Goals. Geneva: World Health Organization; 2018 (https://apps.who.int/iris/handle/10665/328065, accessed 17 March 2023).
5. Primary health care on the road to universal health coverage 2019 monitoring report (conference edition). Geneva: World Health Organization; 2019 (https://www.who.int/healthinfo/universal_health_coverage/report/uhc_report_2019.pdf?ua=1, accessed 14 April 2023).

6. Global Health Observatory: Indicator Metadata Registry List – UHC service coverage index. Geneva: World Health Organization (https://www.who.int/data/gho/indicator-metadata-registry/imrdetails/4834, accessed 18 March 2023).

Topic 2.
Hospital care organization. Statistical measures of hospital activity. Alternatives of in-patient care

Importance of the topic

Hospitals take an important part in any health system. They provide complex therapeutic care depending on their level and capacity, emergency care for the severely injured or the critically ill; they are teaching centres for sharing of knowledge and skills among medical professionals; they constitute an essential source of heath information; and they generally spend the major part of national health care resources. This proves the necessity to know the hospital care organization and methods of evaluation of hospitals' activities.

At the same time in the conditions of limited financial and technical resources it is rational to decrease the hospital costs by introducing efficient medical technologies and shifting services from in-patient level to out-patient level.

Purpose of self-preparation:

To study the peculiarities of hospital care organization, types and levels of hospitals, the leading causes of admission to hospital and specialized medical care organization in in-patient facilities; to be able to calculate the statistical measures of hospital activity and evaluate the effectiveness of hospital services.

Plan of studying the topic

1. The place of hospitals in health care system.
2. Levels of hospital care.
3. Types of hospitals.
4. The leading causes of admission to hospital.
5. Statistical measures of hospital activity and their evaluation.
6. Specialized medical care: providers, consumers, peculiarities of care delivery.
7. Trends in hospital care.
8. Factors influencing the work of hospitals and specialized medical institutions and departments.

Questions for self-control:

1. What is the place of hospitals in health care system?
2. What are indicators for admission of patients to hospital?
3. What proportion of public budget is spent for hospital care in different countries?
4. What are the reasons of high and low rate of hospitalization?
5. What is the ratio of hospital beds to population in your native country, in developed countries, in developing countries?
6. What determines the need of population in hospital services and specialized medical services?
7. What are the advantages of multi-level system of hospital care?

8. What are the levels of hospitals? What are the types of hospitals?
9. What are the facilities of hospitals?
10. What is the meaning of 'continuous care' in out-patient and in-patient institutions?
11. What periods can we distinguish in stay of a patient in hospital?
12. What is the organizational structure of a hospital? What are the departments in a general hospital?
13. What are the functions of admission department? How can be patients admitted to hospital?
14. What are the functions of diagnostic unit?
15. How is surgical service organized in hospitals?
16. What is specific about organization of infectious hospitals?
17. What is different in admission of patients to hospital during pandemic or outbreak of epidemic disease?
18. How is the problem of nosocomial infections solved in hospitals?
19. How to prevent nosocomial infections in hospitals?
20. What indicators can be used to judge about efficiency of hospital services?
21. What is bed occupancy? How is bed occupancy calculated? What is the meaning of this indicator?
22. What is bed turnover rate?
23. What is average length of stay? How is average length of stay in hospital calculated?
24. What factors influence the average length of stay in hospital?
25. How to decrease average length of stay in hospital?
26. How is the indicator of hospital mortality calculated? What is gross mortality rate? What is institutional mortality rate?
27. What factors influence the level of hospital mortality?
28. What indicators are used to judge about quality of hospital services?
29. What are the kinds of specialized medical services?
26. Where can the population receive the specialized medical care?
27. What is the role of hospitals in specialized medical care?
28. What are the trends in hospital care?
29. What alternatives of in-patient care do you know? What are their advantages?
30. How is hospital care differentiated according to the intensity of treatment and care?

Information to remember!

Measurements of hospital service include:

1) bed count is total number of beds in the hospital
2) bed count days mean number of days spent by in-patients in hospital; in-patient day means that patient spend 24 hours in hospital department
3) average occupancy per a year is number of days in the year the bed is occupied, standard parameter is 340 days per a year, for obstetrical and pediatric departments it is 300 days, for infectious diseases it is 310 days, in rural hospitals it can be 320 days

4) occupancy rate is the proportion of beds occupied during the year
5) bed turnover rate is average number of admissions or discharges per 1 bed
6) average length of stay (ALOS) is the mean number of days from admission to discharge except the day of discharge
7) gross death rate is number of patients who died over the number of discharges times 100%
8) institutional death rate – excludes deaths of patients occurred within 48 hours after admission
9) operational activities is the proportion of patient who had undergone surgical treatment
10) number of readmissions counts cases readmitted to hospital department within 30 days from previous discharge from hospital with the same diagnosis, it shows complicated and inadequately treated cases
11) distribution of discharged patient by the outcome
12) rate of post-operative complications
13) post-operative mortality
14) diagnosis discrepancy rate.

Examples of tests

Select one correct answer.

ALTERNATIVES OF IN-PATIENT INSTITUTIONS ARE
day-care center and home hospital
general hospital
center of emergent medicine
specialized hospital
LEVELS OF HOSPITAL CARE ARE
primary, secondary and tertiary
simple and complex
general and specialized
out-patient and in-patient
THE MAIN TASK OF ADMISSION DEPARTMENT OF HOSPITAL IS TO PROVIDE
emergent services
surgical treatment
medical-social expertise
military-medical expertise
THE MAIN TASK OF ADMISSION DEPARTMENT OF HOSPITAL IS
selection and sorting of patients
performing surgical treatment
giving high technological treatment
rehabilitation of patients
INDICATIONS FOR HOSPITALIZATION OF PREGNANT WOMEN FOR GIVING BIRTH IN THE OBSERVATORY DEPARTMENT OF THE MATERNAL INSTITUTION
fetal death
operational activities

normal pregnancy
cardio-vascular disease
INDICATION FOR HOSPITALIZATION OF PREGNANT WOMEN FOR GIVING BIRTH IN THE OBSERVATORY DEPARTMENT OF THE MATERNAL INSTITUTION
Infectious disease of a pregnant woman
operational activities
normal pregnancy
chronic disease of a pregnant woman
THE MAIN TASK OF THE REGIONAL HOSPITAL IS
supply of specialized medical services
licensure of pharmaceutical activities
forensic expertise
medical-social expertise
THE MAIN TASK OF THE REGIONAL HOSPITAL IS
supply of consulting services
licensure of medical activities
supply of primary care services
supply of palliative services
HEALTH CARE INSTITUTIONS OF THE SPECIAL TYPE INCLUDE THE FOLLOWING
bureu of forensic medicine, bureu of medical statistics
hospitals, polyclinics
out-patient institutions
centers of hygiene and epidemiology
CURATIVE-PROPHYLACTIC INSTITUTIONS INCLUDE
sanatoriums
bureu of forensic medicine
centers of catastrophic medicine
bureu of medical statistics
QUALITY INDICATOR IN HOSPITAL IS
institutional mortality rate
supply of physicians
number of beds per one physician
bed count
INDICATORS OF USE OF HOSPITAL BEDS ARE
bed occupancy
supply with physicians
post-operational mortality
gross mortality rate
INDICATORS OF USE OF HOSPITAL BEDS ARE
bed turn-over rate
supply with physicians
post-operational mortality
gross mortality rate

TYPES OF HOSPITAL BY INTENSITY OF CARE
short-stay, intermediate stay, long-stay
primary, secondary, tertiary
pediatric, ophthalmologic, obstetrical
general and specialized
LONG-TERM IN-PATIENT CARE IS PROVIDED BY
hospices and nursing homes
out-patient clinics
sanatorium
general hospitals
LENGTH OF STAY IN HOSPITAL MEASURES STAY OF A PATIENT IN THE INSTITUTION FROM THE DAY OF ADMISSION TILL THE DAY OF DISCHARGE EXCLUDING
the day of discharge
the day of admission
weekends
holidays
IN MOST OF COUNTRIES AVERAGE LENGTH OF STAY IN HOSPITAL IN THE LAST DECADES HAS
declined
increased
not changed
got fluctuations
AVERAGE LENGTH OF STAY IN HOSPITAL CAN DECLINE DUE TO
wide use of non-invasive medical technologies
willingness of patients to be at home
high severity of patients' condition
low bed occupancy
BED TURNOVER RATE IN HOSPITAL SHOWS
the mean number of admission or discharges per one bed
average duration of patient's stay in hospital
case-mix of patients
mortality of patients
COMBINED HOSPITAL HAS
in-patient and out-patient units
maternal and pediatric units
surgical and internal medicine units
children and adult units
ADMISSION OF PATIENT TO HOSPITAL PLANED IN ADVANCE IS CALLED
elective
emergent
urgent
in-patient
ADMISSIONS TO HOSPITAL CAN BE
emergent and elective

independent and initiated by doctors
general and specific
primary and secondary
INSTITUTIONAL MORTALITY RATE MEASURES MORTALITY OF PATIENTS
in hospital excluding deaths of patients in the first 48 hours from admission
in hospital excluding deaths of patients in the first 24 hours from admission
in the first 48 hours after admission
in the first 24 hours after admission
OPERATIONAL ACTIVITY IS MEASURED IN
hospital departments of surgical profile
internal medicine departments
nursing homes
palliative institutions
NORMAL BED OCCUPANCY IN A GENERAL HOSPITAL IS
340 days
320 days
365 days
290 days
SOME DAYS IN A YEAR THE HOSPITAL BEDS ARE NOT OCCUPIED BECAUSE OF
sanitary-hygienic activities
few patients
doctors' holidays
maintenance of the building

Situational tasks

Example of task A.

In August of 2022 4000 inpatients days were served in a hospital with 150 beds. Calculate the percentage of inpatient occupancy rate.

Solution of task A.

Occupancy rate = Total number of inpatient days for a given period x 100 / Available beds x Number of days in the period

Occupancy rate = Total number of inpatient days for a given period x 100 % / Available beds x Number of days in the period = 4000 x 100 % / 150 x 30 = =88,89%
Occupancy rate in August 2022 was 88,9%.

Example of task B and solution.

Bed count in a district hospital is 335. The total number of bed count days in the year 2022 was 85 800. Number of discharged patients was 5460. Number of patients who died was 125, including 55 patients who died in the first 48 hours after admission.

Calculate:

a) average occupancy per a year = bed count days / bed count = 85 800 / 335 = 256,1 days
b) average length of stay per a year = bed count days /number of discharged patients = 85 800 / 5460 = 15,7 days

c) gross death rate = (number of deaths / number of discharges)*100% = 125/ 5460=2,3%
d) institutional death rate = (125 – 55) / (5460 – 55) = 1,3%

Task №1

Bed count in the district hospital is 200, average length of stay in the year 2019 was 10,5 days. Bed occupancy was 340 days in a year. Number of dead patients was 112, including 74 patients who died within 48 hours after admission.

Calculate:

a) total number of bed-count days in 2019

b) number of discharged patients in 2019

c) gross death rate

d) institutional death rate

Task №2

Internal medicine department of a general hospital with 100 beds discharged for the year 3240 patients. 1120 of them were admitted hospital being diagnosed and treated for diseases of cardiovascular system, 234 – rheumatoid diseases, 750 – gastrointestinal tract diseases, 532 – pulmonary diseases, 604 – with the diseases of the nervous system. The bed occupancy was 340 days.

a) Calculate the structure of in-patients by diagnosis.

b) Calculate the average length of stay in the internal medicine department.

Task №3

Bed count in a general municipal hospital is 1000, average length of stay in the year 2021was 11,8 days with 15,1 days – in surgical department, 13,2 – in neurology, 13,2 days in internal medicine, 8,3 – in gynecology and 7,8 – in ENT departments. Bed occupancy was 340 days in a year.

Calculate:

a) total number of bed-count days in the year

b) number of discharged patients in the yeaer

c) compare average length of stay in different departments of hospital, explain the possible reasons for high or low average length of stay of patients in different departments.

Task №4

Bed count in a general municipal hospital is 1 000 beds, including 200 – in internal medicine department, 200 – in surgical department, 200 – in pediatric department, 300 – in department of obstetrics and gynecology, 100 – infectious diseases. Analyze the data given in table 2 and calculate:

a) average length of stay (ALOS) in the year for each department

b) average length of stay generally for the hospital. Analyze the results you got, explain the reasons for high or low ALOS.

c) bed turnover rate for each department and generally for the hospital.

Table 2

Bed occupancy and number of discharged patients are given for each department in the table below.

Department	bed occupancy	number of discharged patients
Internal Medicine	340	6 500
Surgery	340	4 535
Pediatrics	320	5 305
Obstetrics and gynecology	300	12 860
Infectious diseases	310	2 963

Task №5

Analyze the data given in the table 3, answer the questions and draw the conclusions.

Table 3

Discrepancy rate in diagnosis of patients with acute surgical diseases of abdominal organs

Diagnosis	Discrepancy in diagnosis, %	
	In patients referred by out-patient doctors	In emergent patients (Ds was put in admission department of hospital)
Acute appendicitis	39,8	12,5
Acute cholecystitis	11,2	9,7
Acute pancreatitis	10,1	10,0
Strangulated hernia	7,0	1,8

a) In what diagnosis is the percentage of discrepancy the highest at outpatient level and at admission department of hospital?
b) Why is discrepancy higher at outpatient level compare to inpatient level? Show the difference by measures.
c) What can be the reason of high or low rate of diagnosis discrepancy at different diseases?

Task №6

1. Describe the structure of a general hospital. Draw a scheme.
2. Patient Petrov S. needs to get surgical treatment on hip replacement. How can he get the required treatment? What level of hospital care will he need? Show the scheme of patient's communication with health care system.

Recommended literature:

1. Preventive Medicine and Public Health // Brett J. Cassens, 2nd ed., 1992, Harwal. P. 385-410.
2. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 890-917.

URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
3. Public Health 101: Improving Community Health // Riegelman R., Kirkwood B., 3rd ed., Burlington, MA: Jones & Bartlett Learning, 2019. P. 437-466.
URL: https://ocw.ui.ac.id/pluginfile.php/11320/mod_resource/content/1/PH-101-19.pdf
4. Principles of hospital administration and planning // Sakharkar BM, 2nd ed., 2009. P. 3-286.
URL:https://dca.org.sa/downloads/dca/quality_gate/04_E-Library/Healthcare%20Management/Principles-of-Hospital-Administration-and-Planning.pdf
5. Public Hospitals in Developing countries: resource use, cost, financing / Howard Barnum and Joseph Kutzin, 1993. The World Bank, Washington, USA. 335 pp.

Topic 3.
Maternal and child care. Organization and analysis of obstetrical-gynecological services

Importance of the topic

Maternal health is the health of women during pregnancy, childbirth, and the postpartum period. In most cases, maternal health encompasses the health care dimensions of family planning, preconception, prenatal, and postnatal care in order to ensure a positive and fulfilling experience.

Addressing inequalities that affect health outcomes, especially sexual and reproductive health and rights and gender, is fundamental in Public health to ensure all women have access to respectful and high-quality maternity care.

Child health is interrelated to maternal health. More than half of child deaths are due to conditions that could be easily prevented or treated given access to health care and improvements to their quality of life. Over the past several decades, there was a dramatic progress in improving the health and reducing the mortality rate of young children.

Organization of high-quality maternal and child care is the essential task of Public health system that medical students must understand**.**

Purpose of self-preparation:

To know the peculiarities of organization of maternal and child care in Public health systems. To be able to analyze maternal services at the level of prenatal care, antenatal care, delivery care, postnatal care. To know specific indicators of work in maternal and pediatric institutions.

Plan of studying the topic

1. Maternal and child care system in Public health.
2. Risk assessment of health in pregnant women.
3. Levels of maternal care.
4. Specialized obstetrical and gynaecological care in out-patient and in-patient institutions.
5. Specialized neonatal and paediatric care in out-patient and in-patient institutions.
6. Levels of neonatal care departments.
7. Structure and organisation of a maternal hospital.
8. Specific statistical indicators in maternal institutions.
9. Specific statistical indicators in neonatal and paediatric units.

Questions for self-control:

1. What is the role of maternal care in public health?
2. What are primary and specialized services in maternal care?
3. Who can be a provider of maternal care services at out-patient level?

4. How is gynecological services provided?
5. What is the purpose of maternal care system?
6. How is risk estimated in pregnant women? What for is it necessary?
7. What are the primary medical records in out-patient institutions providing prenatal care?
8. What are the levels of maternal care in hospital facilities? How are women referred to maternal care institutions according to individual risk and indications?
9. What reproductive care services are supplied by out-patient institutions working in primary health care?
10. What reproductive care services are provided by district hospitals?
11. What is the role of community health services and family in reproductive health care?
12. What antenatal care is provided by out-patient and maternal in-patient institutions?
13. What is the role of tertiary level hospitals in maternal care?
14. Who provides basic childbirth care in public health system?
15. How is postnatal care provided in public health system?
16. How is child care provided in public health care system?
17. How is emergent neonatal and child care provided in public health system?
18. What are the levels of neonatal care?
19. What is the structure of a maternal hospital?
20. What is the role of admission department in a maternal institution?
21. What is the structure and organization of a physiologic obstetrical department?
22. What is the role of an observatory obstetrical department?
23. What are indications for admission to an observatory obstetrical department?
24. What is the principle of patients' admission to post-delivery unit?
25. How is child care for newborn organized?
26. What are special statistical indicators in maternal institutions?
27. What are special statistical indicators in neonatal care units?
28. How are pediatric services organized for pre-school children?
29. How are pediatric services organized for schoolchildren and adolescents?
30. What public health interventions are important for child and adolescent health?

Information to remember!

Specific statistical indicators in paediatric units / institutions are

- structure of morbidity in newborns
- incidence rate of congenital abnormalities
- rate of intrauterine hypotrophy in newborns
- rate of fetal hypoxia in newborns
- incidence of diseases in newborns
- distribution of newborns by health groups
- percentage of newborns with normal weight
- percentage of low-birth weight infants
- percentage of babies with extremely low weight
- perinatal mortality
- incidence and prevalence rates of diseases by age groups

- proportion of infants who got breastfeeding in the first year of life
- infant mortality
- immunization coverage of children according to national immunization calendar.

Specific statistical indicators in obstetrical institutions are

- coverage of pregnant women by early prenatal care
- coverage of pregnant women by early screening
- rate of premature deliveries
- average number of visits to a physician by a woman during pregnancy
- rate of home deliveries
- rate of multiple pregnancies
- structure of diseases that complicated deliveries
- rate of operative delivery assistance
- rate of complications during delivery
- rate of complications in post-partum period
- rate of physiological deliveries
- rate of Caesarian sections
- maternal mortality rate / ratio.

Examples of tests

Select one correct answer.

MATERNAL INSTITUTION OF THE TERTIARY LEVEL IS
regional perinatal center
obstetrical department of a general hospital
municipal maternal hospital
obstetrical department in a district hospital
PREGNANT WOMEN WITH LOW RISK (PHYSIOLOGIC) PREGNANCY WILL GIVE BIRTH AT:
district maternal hospital
municipal perinatal center
regional / state perinatal center
regional hospital
ONE OF THE MAIN TASKS OF THE MATERNAL CARE SYSTEM IS:
to reduce maternal morbidity and mortality
to increase birth rate
to reduce mortality in motor-vehicle accidents
to reduce operative activity
ORGANIZATION OF OUT-PATIENT GYNECOLOGICAL AND OBSTETRICAL SERVICES INCLUDE:
family planning, antenatal care
in-patient care during pregnancy
delivery care
intensive care for newborns
QUALITY INDICATORS IN MATERNAL INSTITUTION INCLUDE:
maternal and perinatal mortality
bed turnover rate

average length of stay
supply with physicians
ONE OF THE TASKS OF A MATERNAL INSTITUTION IS
to provide care for healthy newborns and qualified treatment for newborns with pathology
to provide antenatal care
to provide family planning services
to provide screening of women for gynecological diseases
PRINCIPLES OF WORK OF MATERNAL INSTITUTIONS IN ORDER TO REDUCE NOSOCOMIAL INFECTIONS ARE:
organization of two obstetrical departments, use of aseptic / antisepsis rules
supply with enough number of doctors
proper nurse-physician ratio
schedule of visits of relatives to hospital
INDICATOR OF OUT-PATIENT GYNECOLOGICAL-OBSTETRICAL CLINIC WORK IS
number of visits per one woman during pregnancy
proportion of normal deliveries
perinatal mortality
morbidity of newborns
EARLY COVERAGE BY PRENATAL CARE MEANS PROPORTION OF PREGNANT WOMEN WHO HAD THEIR FIRST PRENATAL VISIT
before 12 weeks of gestation
before 6 weeks of gestation
before 20 weeks of gestation
before 10 weeks of gestation
INDICATOR OF WORK OF THE MATERNAL CARE INSTITUTION IS
percentage of women giving birth by Cesarean section
early coverage by prenatal care
number of visits per one woman during pregnancy
infant mortality rate
INDICATOR FOR REFERRING PREGNANT WOMEN TO THE OBSERVATORY DEPARTMENT OF THE MATERNAL INSTITUTION INCLUDE
acute respiratory disease
chronic disease
diabetes mellitus
low hemoglobin level
INDICATOR FOR REFERRING PREGNANT WOMEN TO THE OBSERVATORY DEPARTMENT OF THE MATERNAL INSTITUTION INCLUDE
dead fetus
chronic disease
diabetes mellitus
low hemoglobin level

ACCORDING TO THE WORLD HEALTH ORGANISATION CRITERIA OF LOW ACCESS OF WOMEN TO CESSAREAN SECTION IS EVIDENT IF PERCENTAGE OF WOMEN GIVING BIRTH BY CESAREAN SECTION IS
below 5%
below 1%
below 10%
below 20%
MEDICAL RECORD, FILLED BY THE OUT-PATIENT PHYSICIAN, PROVIDING PRENATAL CARE, IS
exchange card of the maternal institution
case history of a newborn
history of child birth
medical registration of birth
ACCORDING TO THE DEFINITION OF THE WORLD HEALTH ORGANISATION MATERNAL MORTALITY RATIO IS CALCULATED PER
100 000 live births
1000 women
1000 fertile age women
100 deliveries
1000 born alive
ONE OF THE STAGES OF MEDICAL-PROPHYLACTIC SERVICE SUPPLY IN THE SYSTEM OF MATERNAL AND CHILD CARE IS
antenatal care
expertise of permanent disability
expertise of temporary disability
independent expertise
DEATH OF A WOMAN WHILE PREGNANT OR WITHIN 42 DAYS AFTER TERMINATION OF PREGNANCY IS CALLED:
early maternal death
late maternal death
direct maternal death
indirect maternal death
PRENATAL OBSERVATION OF PREGNANT WOMEN INCLUDES
early start of prenatal care
delivery in maternal institution
vaccination programs
expertise of disability
THE CESAREAN SECTION RATE IS THE RATIO OF THE NUMBER OF CESAREAN SECTIONS PERFORMED TO THE NUMBER OF:
deliveries
births
obstetrical discharges
first cesarean sections
female patients in hospital

A FETAL DEATH IN UTERO AT 28 WEEKS OF GESTATION WOULD BE CLASSIFIED AS:
late fetal death
early fetal death
premature death
abortion
FETAL DEATHS ARE:
deaths of the fetus after 20 weeks of gestation or with weight more than 500 g
deaths of the fetus after 12 weeks of gestation
deaths of the fetus with weight more than 300 g
deaths of the fetus after 28 weeks of gestation
deaths of the fetus with weight more than 1000 g
NUMBER OF FETAL DEATHS PLUS DEATHS IN THE FIRST WEEK OF LIFE PER 1000 TOTAL BIRTHS IN A YEAR IS CALLED:
perinatal mortality
fetal mortality
infant mortality
neonatal mortality
post-neonatal mortality
VERY LOW MATERNAL MORTALITY RATIO IS IN THE COUNTRIES, WHERE IT IS
below 5
below 10
below 50
below 100
INDICATIONS FOR REFERRING PREGNANT WOMEN TO THE OBSERVATORY DEPARTMENT OF THE MATERNAL INSTITUTION INCLUDE
the absence of an exchange card of the maternal institution
diabetes mellitus
low hemoglobin level
pre-eclampsia

Situational tasks

Example of task solution.

Task A

Number of pregnant women in the district who started prenatal observation in the year 2021 was 100, including 80 women who had their first prenatal visit before 12 weeks of gestation. Number of pregnancies that finished with delivery in the year 2021 was 87, including 5 premature deliveries. All women who gave birth made 880 visits to physicians before delivery.

Calculate indicators characterizing out-patient obstetrical services:

a) early coverage of pregnant women by prenatal care = number of women who had their first prenatal visit before 12 weeks of gestation / Number of pregnant women who started prenatal observation in the year*100% = 80/100 *100=80%

b) average number of visits to a physician by a women during pregnancy = 880/87=10,1 visits.

Task №1

Bed count in the obstetrical department of a general hospital is 50. Bed occupancy in 2021 was 320 days, average length of stay was 5,8 days. Number of Cesarean sections in the year was 312.

Calculate and characterize the indicators from public health perspective:

a) total number of bed-count days in the year

b) number of discharged women in the year

c) rate of deliveries by Cesarean section

Task №2

Calculate and analyze statistical indicators of obstetrical services in a maternal institution on the base of data given in table 4.

Table 4

Indicators of health care services in obstetrical department of a maternal institution

Indicator of obstetrical care	N
Total number of deliveries, including:	2465
Home deliveries	27
Deliveries by Caesarian section	392
Deliveries with operative assistance (forceps or vacuum – assisted vaginal deliveries)	89
Deliveries with labor induction	443
Deliveries with the use of epidural anesthesia	489
Number of women who had complications during delivery (perineal damage / tears, sepsis, discoordinated labor activity)	526
N of women who had complications in post-partum period (bleeding, endometriosis, etc.)	75
Number of physiological deliveries	755

Task №3

Number of pregnant women in the district who started prenatal observation in the given year was 240, including 200women who had their first prenatal visit before 12 weeks of gestation. Number of pregnancies finished by delivery in the year was 195, including 17 premature deliveries. All women who gave birth made 2020 visits to physicians before delivery.

Calculate:

a) rate of early coverage by prenatal care

b) average number of visits to physician by a pregnant woman

c) proportion of premature deliveries

d) Draw conclusions on quality of prenatal services.

Task №4

Analyze the data given in table 5 summarizing out-patient pediatric services provided in a district outpatient clinics in the year 2022.

Table 5

Out-patient pediatric services provided in a district outpatient clinics in the year 2022.

Statistical measures in out-patient pediatric service	N
Mid-year children population	14 115
Number of children aged 1 by the end of the year	510
Infants who got breast-feeding until 6 months of life	465
Infants who got breast-feeding until 12 months of life	313
Number of children covered by medical check-ups	9 625
Number of children eligible for medical check-ups	10 720
Number of children vaccinated according to National immunization calendar	9 428
Number of children eligible for vaccination	10 608
Actual number of preventive physician's visits to children under age of 1	8 123
Planned number of preventive physician's visits to children under age of 1	8 247
Number of children with chronic diseases at dispensary observation by the end of the year	4100
Number of children at dispensary observation who - Recovered - Had improvement of the condition - Had no changes - Had deterioration of the condition	 270 1100 2 490 240
Number of children with chronic diseases at dispensary observation, who got medical services at hospital	920
Number of children with chronic diseases at dispensary observation, who got medical services at rehabilitative facilities	170
Number of children with chronic diseases at dispensary observation, who got medical services at out-patient facilities	1130
Distribution of children by health groups: Group I Group II Group III Group IV Group V	 3 803 7 964 2 287 39 22

Task №5

Analyze the data given in table 6 on maternal care services provided in district outpatient clinics in the year 2022.

Table 6

Out-patient gynaecological and obstetrical services provided in district outpatient clinics in the year 2022.

Statistical measures	**N**
Number of women of reproductive age	31 820
Number of women aged 50 and above	7 560
Total number of deliveries	2 362
Number of abortions	523
Premature deliveries	67
Number of pregnant women who started dispensary follow-up observation in the given year	2 100
Number of pregnant women who had their first prenatal visit before 12 weeks of gestation	1 756
Number of pregnant women who got total prenatal screening by ultra-sound investigation (every trimester)	1 542
Number of pregnant women who were consulted by a therapist	1 718
Number of pregnant women who got screening for syphilis	1 762
Number of pregnant women who got screening for HIV	1795
Number of women who use intra-uterine device for contraception	2 669
Number of women who use hormone contraceptives	6 153

Task №6

1. Draw the scheme showing the structure of a secondary level maternal hospital.
2. What patients are referred to such institution?
3. What are the main tasks of the maternal hospital of the secondary level?

Recommended lliterature:

1. Review in Community Medicine // V.V.R.Sechu Babu, 2nd ed., 1996, Paras Medical Books. P.193-232.
2. Preventive Medicine and Public Health // Brett J. Cassens, 2nd ed., 1992, Harwal. P.1-28.
3. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 520-600. URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
4. Austin, A., Langer, A., Salam, R.A. et al. Approaches to improve the quality of maternal and newborn health care: an overview of the evidence. Reprod Health 11 (Suppl 2), S1 (2014). URL https://doi.org/10.1186/1742-4755-11-S2-S1

5. Textbook of Preventive and Social Medicine // Mahajan & Gupta 4th ed., Jaypee Brothers Medical Publishers, 2013. P. 576-632. URL:https://drive.google.com/file/d/1MqPqPEXt3fjBVG0QvxSNdeFjJn_uWpQZ/view
6. World Health Organization. Maternal Care. URL: https://www.who.int/health-topics/maternal-health#tab=tab_1

Topic 4. Epidemiology of main non-communicable diseases. Designing of intervention programs at community level on control of non-communicable diseases

Importance of the topic

Non-communicable diseases present a large burden for every society and health care systems. NCD result in chronic multi-morbidity conditions, which lead to large number of days of temporary disability, numerous cases of permanent disability, high costs for families, health care and welfare systems. It is necessary to know risk factors of different non-communicable diseases, appropriate levels of prevention of non-communicable pathology, the place of different diseases in morbidity and mortality structure in different countries. It is important for future physicians to be able to work out the appropriate preventive public health programs on control of NCD to reduce their severe consequences.

Purpose of self-preparation:

To study epidemiology, causal and risk factors, prevention strategies and peculiarities of prophylaxis of the basic kinds of non-communicable chronic pathology.

Plan of studying the topic

1. Non-communicable chronic pathology as a medical-social problem in the developing and developed countries: definition, epidemiologic importance (incidence, prevalence, disability, mortality, economic burden, need in specialized medical services).
2. Classes of non-communicable diseases.
3. Characteristics of chronic diseases and conditions.
4. The difficulties in etiological investigation and research of chronic diseases.
5. Cardio-vascular diseases as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.
6. Oncologic diseases: characteristics, kinds, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.
7. Chronic obstructive pulmonary disease as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.
8. Diabetes mellitus as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.

9. Renal diseases as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.
10. Cerebrovascular disease as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (temporary and permanent disability), specialized medical service organization.
11. Liver cirrhosis as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.
12. Peptic ulcer disease as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (temporary and permanent disability), specialized medical service organization.
13. Anemia as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences, specialized medical service organization.
14. Mental diseases as a medical-social problem in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences (temporary and permanent disability), specialized medical service organization.
15. Alcoholism and drug addiction as medical-social problems in Russia and abroad: characteristics, epidemiology, causal and risk factors, prevention at different levels, consequences, specialized medical service organization.
16. Trauma and accidents as a medical-social problem in Russia and abroad: kinds, epidemiology, causal and risk factors, prevention at different levels, consequences (mortality, temporary and permanent disability), specialized medical service organization.

Questions for self-control:

1. What is the place of non-communicable chronic pathology in the structure of morbidity and mortality in different countries?
2. How are diseases and deaths classified by the World Health Organization? What are the classes of non-communicable diseases?
3. What are the main characteristics of chronic diseases and conditions?
4. What are the key risk factors of non-communicable diseases?
5. What are the difficulties in etiological investigation of chronic diseases?
6. Characterize cardiovascular diseases as a medical-social problem.
7. Identify the risk groups in community for cardiovascular diseases according to sex, age, place of living, profession, family status.
8. What are the risk and causal factors of cardiovascular diseases?
9. What are prophylactic measures to prevent cardiovascular diseases at primary level?
10. What are high-risk populations for screening for cardiovascular diseases?

11. How is the medical service for patients with cardiovascular diseases organized in Russia and abroad?
12. Characterize oncologic diseases as a medical-social problem.
13. Describe the populations at risk for the development of cancer of different localization (breast, colon and rectum, cervix, prostate; lung, stomach, pharynx and larynx, oral cavity, leukemia and lymphomas) according to sex, age, place of living, profession, family status.
14. What are the risk and causal factors of cancer of different localization?
15. What are the prophylactic measures to prevent cancer of different organs at primary level?
16. What are the high-risk populations for screening for cancer of different organs?
17. How is the medical service for patients with cancer organized in Russia and abroad?
18. Characterize diabetes mellitus as a medical-social problem.
19. Describe the risk factors of diabetes mellitus.
20. What population groups should be screened for diabetes?
21. What are the prophylactic measures to prevent diabetes at primary level?
22. What are the high-risk populations eligible for screening for diabetes?
23. What does the tertiary level of diabetes prevention mean?
24. How is the medical service for patients with diabetes organized in Russia and abroad?
25. Characterize cerebrovascular disease as a medical-social problem.
26. What are the risk and causal factors of cerebrovascular disease?
27. What are the prophylactic measures to prevent cerebrovascular disease at primary and secondary levels?
28. Characterize chronic obstructive pulmonary disease (COPD) as a medical-social problem.
29. Describe the high-risk groups of population for COPD.
30. What are the risk and causal factors of COPD?
31. What are the prophylactic measures to prevent COPD at primary level?
32. What is efficacy of early detection of COPD ?
33. How is the medical service for patients with COPD organized in Russia and abroad?
34. Characterize liver cirrhosis as a medical-social problem.
35. Describe the risk groups for development of liver cirrhosis.
36. What are the risk and causal factors of liver cirrhosis?
37. What are the prophylactic measures to prevent liver cirrhosis at different levels?
38. Characterize renal diseases as a medical-social problem.
39. What are the risk and causal factors of renal diseases?
40. What are the prophylactic measures to prevent renal diseases at primary and secondary levels?
41. How is the medical service for patients with renal diseases organized in Russia and abroad?
42. Characterize peptic ulcer disease as a medical-social problem.
43. Describe the risk groups for peptic ulcer disease.

44. What are the risk and causal factors of peptic ulcer disease ?
45. What are the prophylactic measures to prevent peptic ulcer disease at different levels?
46. Characterize anemia as a medical-social problem.
47. Describe the risk groups in different kinds of anemia.
48. What are the risk and causal factors of acquired and congenital anemia?
49.What are the prophylactic measures to prevent acquired and congenital anemia at different levels?
50. Characterize mental diseases as a medical-social problem.
51. Describe the risk groups of population for mental diseases.
52. What are the risk and causal factors of mental diseases?
53. What are the prophylactic measures to prevent mental diseases at different levels?
54. Characterize alcoholism and drug addiction as medical-social problems.
55. Describe the risk groups of population for alcoholism and drug addiction.
56. What are the risk and causal factors of alcoholism and drug addiction?
57. What are the prophylactic measures to prevent alcoholism and drug addiction at different levels?
58. What are the consequences of alcoholism and drug addiction?
59. Characterize traumas, poisonings, suicides as medical-social problems.
60. What are the risk and causal factors of traumas, poisonings, suicides?
61. What are the economic consequences of traumas, poisonings, suicides?
62. What should the prevention strategy include to reduce mortality and disability rate in young and middle age populations?
63. Enumerate the principles of successful intervention program for control of non-communicable diseases. What should be its purpose and objectives? How much is the necessary duration of the program? Who must be responsible for its implementation? What main activities should be arranged? How to judge about efficacy of the intervention program?
64. Give examples of successful intervention programs on control of non-communicable diseases.

Information to remember!

Sources of data about diseases and health risks in the population:

Individual persons

Health-care providers, facilities, and records

- Physician offices
- Hospitals
- Outpatient departments
- Emergency departments
- Inpatient settings
- Laboratories

Environmental conditions

- Air
- Water
- Animal vectors

Administrative actions

Financial transactions
- Sales of goods and services
- Taxation

Legal actions
Laws and regulations
[Source: https://www.cdc.gov/csels/dsepd/ss1978/lesson5/section4.html]

Types of registries used for health surveillance:

1. Vital event registration
    1. Birth registration
    2. Marriage and divorce registration
    3. Death registration
2. Registries used in preventive medicine
    1. Immunization registries
    2. Registries of persons at risk for selected conditions
    3. Registries of persons positive for genetic conditions
3. Disease-specific registries
    1. Blind registries
    2. Birth defects registries
    3. Cancer registries
    4. Psychiatric case registries
    5. Ischemic heart disease registries
4. Treatment registries
    1. Radiotherapy registries
    2. Follow-up registries for detection of iatrogenic thyroid disease
5. After-treatment registries
    1. Handicapped children
    2. Disabled persons
6. Registries of persons at risk or exposed
    1. Children at high risk for developing a health problem
    2. Occupational hazards registries
    3. Medical hazards registries
    4. Older persons or chronically ill registries
    5. War or chemical attack survivors
    6. Earthquake or tsunami survivors
7. Skills and resources registries
8. Prospective research studies
9. Specific information registries

[Source: Koo D, Wingo P, Rothwell C. Health Statistics from Notifications, Registration Systems, and Registries. In: Friedman D, Parrish RG, Hunter E (editors). Health Statistics: Shaping Policy and Practice to Improve the Population's Health. New York: Oxford University Press; 2005, p. 91. Weddell JM. Registers and registries: a review. Int J Epid 1973;2:221–8.]

Examples of tests

Select one correct answer.

RISK FACTORS OF CARDIOVASCULAR DISEASES INCLUDE
high cholesterol level
traumas in the anamnesis
low body mass index
high consumption of fruits and vegetables
RISK FACTORS OF CARDIOVASCULAR DISEASES INCLUDE
low physical activities
low body mass index
HIV/ AIDS
smoking cessation
RISK FACTOR OF ONCOLOGIC DISEASES INCLUDE
family history of cancer
high consumption of fruits and vegetables
high physical activities
HIV
RISK FACTORS OF ONCOLOGIC DISEASES INCLUDE
consumption of food, containing preservatives and GMOs
high consumption of fruits and vegetables
high physical activity
HIV
RISK FACTOR OF LUNG CANCER IS
tobacco smoking
HIV
high consumption of fruits and vegetables
high physical activities
BREAST CANCER RISK FACTOR IS
family history of cancer
HIV
high-risk pregnancy
long breastfeeding
PRIMARY PREVENTION OF CARDIOVASCULAR DISEASES INCLUDES
regular physical activity
rehabilitation programs
regular intake of antihypertensive drugs
vascular stenting
SECONDARY PREVENTION OF CARDIOVASCULAR DISEASES INCLUDES
regular check of blood pressure
consumption of raw fruits and vegetables
taking of statin drugs
vascular stenting
PRIMARY PREVENTION OF CARDIOVASCULAR DISEASES INCLUDES
control of salt intake
screening for hypercholesterolemia

emergent hospitalization to intensive care unit
regular intake of antihypertensive drugs
PRIMARY PREVENTION OF CARDIOVASCULAR DISEASES INCLUDES
giving up alcohol
quick transporting to hospital in case of acute pain in the heart
heart bypass surgery
blood transfusion
SECONDARY PREVENTION OF BREAST CANCER INCLUDES
mammography or breast palpation
balanced diet
chemotherapy
surgical treatment
NOWADAYS THE MOST IMPORTANT HEALTH CARE PROBLEM IN NON-COMMUNICABLE DISEASES IN THE MAJORITY OF COUNTRIES IS
cardiovascular mortality and morbidity
occupational traumas and injuries
nervous system diseases
rheumatoid diseases
THE APPROPRIATE LEVELS OF PREVENTION FOR QUICK REDUCTION OF MORTALITY FROM CARDIO-VASCULAR DISEASES ARE
secondary and tertiary prevention
primordial and primary prevention
primary and tertiary prevention
primordial and secondary prevention
TEACHING INSULIN ADMINISTRATION AT HOME IS THE EXAMPLE OF
tertiary prevention of diabetes mellitus
primary prevention of diabetes mellitus
secondary prevention of diabetes mellitus
primary prevention of mental disorders
INTERVENTION PROGRAMS IN CONTROL OF NON-COMMUNICABLE DISEASES MUST BE
sustainable, with duration at least 5 years
aimed at total eradication of diseases
short in duration
aimed at quick effect
PECULIARITY OF NON-COMMUNICABLE DISEASE CONTROL PROGRAMS IS
necessity to control quality of life after treatment
short follow up
short natural history
short treatment schedule
MAJOR DISEASES THAT ACCOUNT FOR 82% OF ALL NON-COMMUNICABLE DISEASES DEATHS IN THE WORLD INCLUDE:
cardiovascular diseases, cancers, respiratory diseases, diabetes
musculo-skeletal diseases, nervous system diseases, cardio-vascular diseases

cancers, gastro-intestinal diseases, respiratory diseases
diabetes, endocrine diseases, cardio-vascular diseases
THE MOST COMMON CAUSES OF NON-COMMUNICABLE DISEASES ARE STRONGLY CORRELATED TO
metabolic and behavioral risk factors
genetic factors
environmental pollution
occupational hazards
THE WORLD HEALTH ORGANIZATION STATES THAT NON-COMMUNICABLE DISEASES CAUSE
70% of global disease load
50% of global disease load
30% of global disease load
100% of global disease load
ACCORDING TO THE WORLD HEALTH ORGANIZATION DATA ABOUT 75% OF NON-COMMUNICABLE DISEASE DEATHS OCCUR IN
low- and middle-income countries
high-income countries
middle- and high-income countries
middle-income countries

Situational tasks

Task №1

Fill in the table 7 entering information on appropriate methods of control of non-communicable diseases.

Table 7

Epidemiology and prevention of main non-communicable diseases

NCD	Short characteristics of pathology	Epidemiology (incidence, prevalence, mortality)	Causal and risk factors	Methods of prevention at different levels	Example of preventing activity in general practice
Cardio-vascular pathology					
Chronic obstructive pulmonary disease					
Diabetes Mellitus					
Lung cancer					
Breast cancer					
Alcoholism and drug addiction					

Task №2

Design an intervention program for any non-communicable diseases prevalent in the community where you live.

Remember that multiple health problems confront the populations of different countries. Certain problems present an immediate threat to health, whereas others are persistent, long-term problems with relatively stable incidence and prevalence among the populations they affect.

Give epidemiological description of the disease (incidence and prevalence rates in the last 5 years, cause-specific mortality rates). Identify risk factors prevalent in the community, which can be responsible for the diseases development. Developing intervention program, describe the following:

- Location – the place, where you are going to run it
- The severity of the problem
- Duration of intervention
- Effective levels of prevention according to Evidence-based Medicine
- Plan of activities: community interventions or collaborative work with medical providers
- Resources you need (personnel, financial, technical, social)
- Organization of training of personnel
- Evaluation of the program by outcome measures
- The planned sustainability of the intervention

Criteria developed for selecting and prioritizing health problems for surveillance include the following:

Public health importance of the problem:

- incidence, prevalence
- severity, disabilities
- mortality caused by the problem
- socioeconomic impact
- communicability
- potential for an outbreak
- public perception and concern
- international requirements.

Ability to prevent, control, or treat the health problem:

- preventability
- control measures and treatment.

Capacity of health system to implement control measures for the health problem:

- speed of response
- economics
- availability of resources, and
- what surveillance of this event requires.

Task №3

State funding for a childhood asthma program has just become available. To initiate surveillance for childhood asthma, the staff is reviewing different sources of

data on asthma. Discuss the advantages and disadvantages of the following sources of data and methods for conducting surveillance for asthma.

- Self-reported asthma prevalence and asthmatic attacks obtained by a telephone survey of the general population.
- Asthma-associated outpatient visits obtained from periodic surveys of local health-care providers, including emergency departments and hospital outpatient clinics.

Answer for task №3.

Asthma is a chronic illness that can vary in severity. Using just one source of data or just one dataset to monitor it provides limited knowledge of its extent and the potential effect of treatment and other interventions on it. Thus, using multiple sources of data with information on asthma's incidence, prevalence, morbidity, and mortality is the best way to conduct surveillance for this illness.

- Self-reported asthma prevalence or attacks provides information on its occurrence among the entire population, even those who might not seek or receive medical care for it.
- The majority of cases of asthma requiring medical attention are observed in physician offices, emergency departments, or outpatient clinics. Thus, obtaining information from these sources provides optimal knowledge of its occurrence and morbidity among the majority of persons.
- Severe episodes of illness can require hospitalization and be an indicator that routine treatment in outpatient settings is not being delivered effectively to the whole population. Thus, data on hospitalizations caused by asthma is helpful in monitoring effectiveness of interventions.
- Deaths from asthma are similar to hospitalizations and might represent a failure of the health-care system to deal effectively with the illness.
- In addition to the usefulness of different sources, as described previously, certain advantages and disadvantages of different methods of gathering data from these sources are described in the following sections.

Surveys

Advantages

- More control over the quality of the data.
- More in-depth data possibly collected on each case than is usually possible with notifications.
- Can identify the spectrum of illness, including cases that do not warrant medical care.
- More accurate assessment of true incidence and prevalence.

Disadvantages

- More costly to perform because surveys usually require development of de-novo data-collection systems and hiring of interviewers who require training and supervision.
- Might represent only a single point in time ("snapshot"), if survey is not periodically repeated; might miss seasonal trends, rare diseases, or rapidly fatal diseases.
- Recall bias more likely to affect results because data collected retrospectively (notifications are usually prospective).

Notifications (Reporting of illness by health-care providers)

Advantages

- Cheaper (for the health department).
- Typically use existing systems and health-care personnel for collecting data.
- Allows monitoring of trends over time.
- Ongoing data collection might allow collection of an adequate number of cases to study those at risk. With surveys, an event might be too infrequent to gather enough cases for study; with notifications, the observation period can be extended until sufficient numbers of cases are collected.

Disadvantages

- Might not provide a representative picture of the incidence or prevalence unless care is taken in selecting reporting sites and ensuring complete reporting.
- Data that can be collected are limited by the skill, time, and willingness of the data collectors, who usually have other responsibilities.
- Quality control might be a major problem in data collection.
- The quality of data might vary among collection sites.
- As a result, notifications usually provide a substandard estimate of the true incidence and prevalence.

An alternative to notification might be to enroll interested and appropriate health-care providers and clinics in a sentinel system to gather case numbers of asthma.

Recommended literature:

1. Review in Community Medicine // V.V.R.Sechu Babu, 2nd ed., 1996, Paras Medical Books. P.311-328.
2. Preventive Medicine and Public Health // Brett J. Cassens, 2nd ed., 1992, Harwal. P.135-157, 189-208, 209-224, 243-254.
3. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 362-413.
URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
4. Public Health 101: Improving Community Health // Riegelman R., Kirkwood B., 3rd ed., Burlington, MA: Jones & Bartlett Learning, 2019. P. 276-310.
URL: https://ocw.ui.ac.id/pluginfile.php/11320/mod_resource/content/1/PH-101-19.pdf
5. Textbook of Preventive and Social Medicine // Mahajan & Gupta 4th ed., Jaypee Brothers Medical Publishers, 2013. P. 353-387.
URL:https://drive.google.com/file/d/1MqPqPEXt3fjBVG0QvxSNdeFjJn_uWpQZ/view
6. World Health Organization. Non-communicable disease control. URL: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

Topic 5.
Epidemiology of the selected communicable diseases, strategies of prophylaxis and control of infections. Surveillance and notification systems. Eradication and control strategies of main most prevalent infections

Importance of the topic

Infectious diseases are the leading causes of morbidity and mortality in many developing countries of Africa, Asia and Latin America. Communicable diseases should be under particular control and monitoring that is why it is necessary for future doctors to know the incidence, prevalence, case-fatality and contagiousity of infectious pathologies, the regional peculiarities of infectious disease epidemiology, the role of social, biologic and natural factors in spread of infectious diseases, medical and social ways of prophylaxis of communicable diseases, strategies of eradication and control of main infections.

Purpose of self-preparation:

To study infectious diseases as a medical-social problem, epidemiology of selected acute illnesses, kinds of infection spread, prevention of communicable diseases at different elements of transmission chain according to the infectious disease process and control strategies of the main world spread infections.

Plan of studying the topic

1. The place of communicable diseases in the mortality and morbidity structure in different countries.
2. The definition of “infection” and levels of infection.
3. The definitions of terms “host”, “reservoir”, “carrier” and their classification.
4. Types of infectious disease spread.
5. Transmission chain of infection and its elements.
6. Modes of infectious disease transmission.
7. The stages of infectious disease development.
8. General methods of control and prevention of infectious diseases.
9. Immunobiologic agents and their role in infectious disease prevention. Essentials of successful immunization program.
10. Measles: epidemiology, outbreaks, infectious disease process, control and prevention strategies.
11. Influenza: epidemiologic features, infectious disease process, control and prevention strategies.
12. Educational and behavioral measures of infectious disease control. Sexually transmitted diseases (STDs) as a medical-social problem: general characteristics, epidemiology, prevention at different levels.
13. Acquired immune deficiency syndrome (AIDS) as a medical-social problem: epidemiology, infectious disease process, control and prevention strategies.

14. Viral hepatitis as a medical-social problem: epidemiology, infectious disease process, control and prevention strategies.
15. Tuberculosis as a medical-social problem: epidemiology, infectious disease process, control and prevention strategies.
16. Local endemic infections: malaria, yellow fever, dengue. Peculiarities of environmental control measures.
17. Pandemic of COVID-19 and its impact on global health. Risks of new infections.
18. Eradication and control strategies for infectious diseases.

Questions for self-control:

1. What is the importance of studying epidemiology of communicable diseases?
2. What is the place of infectious pathology in morbidity and mortality structure in different countries? Explain the differences between countries.
3. What is “infection”? What are types of infections according to the causative agent?
4. What are the types of infectious disease spread? Give the examples.
5. What are the elements in transmission chain of infection?
6. Give the definition to “a host”.
7. What is classification of hosts?
8. Give the definition to “a reservoir”.
9. What are the types of reservoirs?
10. Give the definition of “a carrier”.
11. What is classification of carriers?
12. What are the elements in the carrier’s state?
13. What are the preventive measures at different elements of transmission chain?
14. What are the groups of infections according to the means of transmission?
15. Characterize the preventive measures according to different kinds of direct and indirect transmission of infection.
16. What are the stages in the development of infectious disease?
17. What are the occupational / behavioral (social) / environmental / methods of control and prevention of communicable diseases?
18. What are the types of immunobiologic agents to prevent infectious disease process?
19. What are the recommendations for use of immunobiologic agents?
20. What are the possible reactions to vaccine components?
21. What are the indications and contraindications to vaccination?
22. What is the basis of successful immunization program?
23. What is notification of communicable diseases? What are the levels of notification?
25. What is the meaning of eradication strategy of infectious diseases? What infections can be eradicated in the nearest future?
26. What is the meaning of elimination strategy of infectious diseases? When is it used? Give examples.
27. What is the meaning of control strategy of infectious diseases?
28. Characterize the prevention strategies to control influenza / COVID-19 / malaria / dengue / measles?
29. What is the medical-social significance in control of STDs?

30. What STDs do you know?
31. What are the epidemiologic factors of STDs? Characterize the risk factors for STDs.
32. What are the levels of STDs prevention?
33. Characterize the contemporary epidemiologic situation of HIV / AIDS in the world.
34. Characterize the kinds of viral hepatitis and medical-social significance of this infection.
35. Characterize the epidemiologic features, modes of transmission and preventive strategies of Hepatitis A virus, Hepatitis B virus?
36. What is the medical-social significance of tuberculosis (TB)?
37. What are the risk factors for TB?
38. What are the preventive measures for TB?
39. How is early detection of TB carried out? What is DOTS (directly-observed treatment, short-course) strategy?
40. What are nosocomial infections? What is their role in hospital mortality? How are they controlled?

Information to remember!

Steps for foodborne outbreak investigation:

1. Detect a possible outbreak by monitoring for reported illnesses nationwide.
2. Define who will be included in the outbreak and look for additional sick people.
3. Generate hypotheses (potential explanations) by interviewing people about what they ate before getting sick.
4. Test hypotheses by comparing what sick people ate to what people who are not part of the outbreak ate.
5. Confirm the contaminated food using epidemiologic, laboratory, and traceback information and identify the point of contamination.
6. Stop the outbreak by recalling contaminated food, cleaning or closing food facilities, and providing advice to people and businesses.
7. Decide the outbreak is over when illnesses stop and the contaminated food is no longer available.

Infection control basis.

- ✓ Perform hand hygiene.
- ✓ Use personal protective equipment whenever there is an expectation of possible exposure to infectious material.
- ✓ Follow respiratory hygiene / cough etiquette principle.
- ✓ Ensure appropriate patient placement.
- ✓ Properly handle and properly clean and disinfect patient care equipment and instruments / devices. Clean and disinfect the environment appropriately.
- ✓ Handle textiles and laundry carefully.
- ✓ Follow safe injection practices.
- ✓ Wear a surgical mask when performing lumbar punctures.

- ✓ Ensure health worker safety including proper handling of needles and other sharps.
- ✓ Transmission based precautions are used in addition to standard precautions for patients with known or suspected infections.

Source: Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Healthcare Quality Promotion (DHQP).
(https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html)

Surveillance of infectious diseases includes the following:

1. morbidity reports from clinics to public health offices;
2. mortality reports from attending doctors to vital records;
3. reports from selected sentinel centers (can be a pediatric practice site, a hospital emergency room, or other location which will provide a 'finger on the pulse' to assess the degree and kind of morbidity occurring in the community, often – location previously known for disease transmission);
4. special field investigations of epidemics or individual cases;
5. laboratory monitoring of infectious agents in population samples;
6. data on supply, use, and side-effects of vaccines, toxoids, immune globulins;
7. data on vector control activities such as insecticides use;
8. immunity levels in samples of the population at risk;
9. review of current literature on the disease;
10. epidemiologic and clinical reports from other jurisdictions.

Criteria for assessing eradicability of diseases, international task force for disease eradication:

1. scientific feasibility

a) epidemiologic vulnerability; lack of non-human reservoir, ease of spread, no natural immunity, relapse potential;
b) effective practical intervention available; vaccine or other primary preventive or curative treatment, or vectoricide that is safe, inexpensive, long-lasting, and easily used in the field;
c) demonstrated feasibility of elimination in specific locations such as an island or geographic unit.

2. political will / popular support

a) perceived burden of the disease: morbidity, mortality, disability, costs of care in developed and developing countries;
b) expected cost of eradication;
c) synergy of implementation with other programs;
d) reasons for eradication versus control.

Essentials of successful immunization program: should aim at 95% coverage at appropriate times; vaccine supply should be adequate and continuous, supplies should be ordered from known manufacturers meeting international standards, all batches should be tested for safety and efficacy prior to release for use; proper conditions to store, only disposable syringes should be used; administration by trained personnel using community-oriented approaches; on-going education and training , incentive payments for personnel; free to patient or with a minimum fee.

Accurate and complete recording with automatic reminders helps promote compliance, as does co-scheduling of immunization appointments with other services. Reminders for high-risk families can include use of mail, email, telephone, home visits. National immunization days are recommended.

Examples of tests

Select one correct answer.

THE FIRST STAGE OF THE INFECTIOUS DISEASE IS
incubation period
prodromal stage
invasive stage
convalescence period

CONTROL OF COMMUNICABLE DISEASES IS BASED ON
agent-host-environment triad
control of the sick
control of medical providers
control of drug supply

EFFECTIVE METHOD OF PREVENTION OR CONTROL OF COMMUNICABLE DISEASES IS
vaccination program
coordination program
management program
intervention program

CHLORINATION OF WATER IS A METHOD OF PREVENTION OF COMMUNICABLE DISEASES BASED ON
environmental control
occupational control
social control
behavior control

METHOD OF PREVENTION OR CONTROL OF COMMUNICABLE DISEASES CAN INCLUDE
educational measures
psychological measures
cognitive measures
experimental measures

METHODS OF CONTROL OF SEXUALLY TRANSMITTED INFECTIONS INCLUDE:
educational / social measures
environmental measures
animal control
food control

EFFECTIVE METHOD OF CONTROL OF RUBELLA, MUMPS, POLIOMYELITIS IS
vaccination program
environmental control
behavioral control

food control
IMMUNIZATION OF FOOD HANDLERS, HEALTH AND CHILD CARE WORKERS IS AN EXAMPLE OF:
occupational control
social control
behavior control
food control
SCREENING OF PEOPLE FOR TUBERCULOSIS IS AIMED TO USE METHOD OF CONTROL OF COMMUNICABLE DISEASES CALLED
case finding and treatment
immunization
environmental control
occupational control
CONTINUOUS REGISTRATION OF ALL ASPECTS OF OCCURRENCE AND SPREAD OF DISEASE IS CALLED
surveillance system
reporting system
statistics
epidemiology
DISEASES, WHICH A PHYSICIAN IS LEGALLY REQUIRED TO REPORT TO STATE OR LOCAL PUBLIC HEALTH OFFICIALS, BY REASON OF THEIR PUBLIC HEALTH IMPORTANCE ARE CALLED:
notifiable
statistically reported
socially important
strategic
INFECTIONS TRANSMITTED BY INSECTS ARE CALLED
vector-borne diseases
food-borne diseases
water-borne diseases
air-borne disease
MATERNAL-INFANT TRANSMISSION OF INFECTION DURING PREGNANCY, DELIVERY, BREAST-FEEDING IS CALLED:
vertical
genetic
family
indirect
WAY OF DIRECT TRANSMISSION OF COMMUNICABLE DISEASES IS
by sneezing
by food
by water
by insects
PERMANENT REDUCTION TO ZERO OF THE WORLDWIDE INCIDENCE OF INFECTION CAUSED BY A SPECIFIC AGENT AS A RESULT OF DELIBERATE EFFORTS IS CALLED

eradication of disease
control of disease
elimination of disease
extinction of disease
EXAMPLE OF ERADICATED INFECTIOUS DISEASE IS
smallpox
measles
HIV
poliomyelitis
THE REDUCTION OF INFECTIOUS DISEASE INCIDENCE, PREVALENCE, MORBIDITY OR MORTALITY TO A LOCALLY ACCEPTABLE LEVEL AS A RESULT OF DELIBERATE EFFORTS IS CALLED
control of disease
eradication of disease
elimination of disease
extinction of disease
REDUCTION TO ZERO OF THE INCIDENCE OF A SPECIFIED DISEASE IN A DEFINED GEOGRAPHICAL AREA AS A RESULT OF DELIBERATE EFFORTS IS CALLED
elimination of disease
eradication of disease
control of disease
extinction of disease
EXAMPLE OF ELIMINATED INFECTIOUS DISEASE IS:
neonatal tetanus
tuberculosis
HIV
chickenpox
COMMUNICABLE DISEASE PREVENTION PROCEDURE OF DIRECT TRANSMISSION IS
wearing of a mask and gowns
use of doors screens
application of insect repellents
use of window screens
OCCURRENCE IN A COMMUNITY OR REGION OF A NUMBER OF CASES OF AN ILLNESS IN EXCESS OF THE USUAL OR EXPECTED NUMBER OF CASES IS CALLED
an epidemic
endemic disease
sporadic disease
a pandemic

Situational tasks

Task №1

Select one of the infectious diseases, that presents a public health problem in your country / region. Characterize its epidemiology in your country / region

(incidence, case-fatality, high risk groups). Suggest a national / regional intervention program on control of the selected disease using literature and statistical data. Develop the program on the base of prevention (control) principles of agent-host-environment triad.

Task №2

Assume you work in a country, in which none of the following conditions is on the state list of notifiable diseases. For each condition, list at least one existing source of data that you need for conducting surveillance on the condition. What factors make the selected source or data system more appropriate than another?

Listeriosis: A serious infection can result from eating food contaminated with the bacterium *Listeria monocytogenes*. The disease affects primarily pregnant women, newborns, and adults with weakened immune systems. A person with listeriosis has fever, muscle aches, and sometimes gastrointestinal symptoms (e.g., nausea or diarrhea). If infection spreads to the nervous system, such symptoms as headache, stiff neck, confusion, loss of balance, or convulsions can occur. Infected pregnant women might experience only a mild influenza-like illness; however, infections during pregnancy can lead to miscarriage or stillbirth, premature delivery, or infection of the newborn.

Yellow Fever: It is an epidemic-prone mosquito-borne vaccine preventable disease that is transmitted to humans by the bites of infected mosquitoes. Yellow fever is caused by an arbovirus (a virus transmitted by vectors such mosquitoes, ticks or other arthropods) transmitted to humans by the bites of infected *Aedes* and *Haemagogus* mosquitoes. These day-biting mosquitoes breed around houses (domestic), in forests or jungles (wild), or in both habitats (semi-domestic). Yellow fever is a high-impact high-threat disease, with risk of international spread, which represents a potential threat to global health security.

There are 3 types of transmission cycles. The first is sylvatic (or jungle) yellow fever in which monkeys, which are the primary reservoir of yellow fever, are bitten by wild mosquitoes that pass the virus on to other monkeys and occasionally humans. The second is intermediate yellow fever in which semi-domestic mosquitoes infect both monkeys and people. This is the most common type of outbreak in Africa. The third is urban yellow fever of which large epidemics occur when infected people introduce the virus into heavily populated areas with high mosquito density and where people have little immunity. In these conditions, infected mosquitoes transmit the virus from person to person.

Strong case-based surveillance for yellow-fever can help detect outbreaks early as well as spread to new areas. Occasionally, infected travelers have exported cases to countries that are free of yellow fever. However, the disease can only spread easily if in the country there are mosquito species able to transmit it, specific climatic conditions and the animal reservoir needed to maintain it. To prevent international spread, it is essential that the International Health Regulations are applied and that people who travel to high risk areas have yellow fever vaccination certificates.

Task №3

Select any infectious disease typical for your region in the country you live.

Make analysis on epidemiologic situation on this infectious disease in your country (state / province / district). Characterize each point.

1. Public health importance of the disease.
2. Ability to prevent, control, or treat the disease.
3. Capacity of health system to implement control measures for the selected infectious disease.
4. Surveillance required for this event.

Task №4

During the previous 6 years, one to three cases per year of tuberculosis had been reported to a state health department. During the past 3 months, 17 cases have been reported. All but two of these cases have been reported from one county. The local newspaper published an article about one of the first reported cases, which occurred in a girl aged 3 years. Describe the possible causes of the increase in reported cases.

The answer for task №4.

Possible explanations for the sudden increase include those listed in the following. Each possibility should be investigated before deciding that the increase is a true increase in incidence.

1. Change in surveillance system or policy of reporting.
2. Change in case definition.
3. Improved or incorrect diagnosis.

- New laboratory test.
- Increased physician awareness of the need to test for tuberculosis, new physician in town, and so forth.
- Increase in publicity or public awareness that might have prompted persons or parents to seek medical attention for compatible illness.
- New population subgroup (e.g., refugees) in state A who have previous recent vaccination against tuberculosis using the BCG vaccine.
- New or untrained staff conducting testing for tuberculosis and incorrect interpretation of skin reaction to tuberculin.

4. Increase in reporting (i.e., improved awareness of requirement to report).
5. True increase in incidence.

Recommended literature:

1. Review in Community Medicine // V.V.R.Sechu Babu, 2nd ed., 1996, Paras Medical Books. P. 233-310.
2. Preventive Medicine and Public Health // Brett J. Cassens, 2nd ed., 1992, Harwal. P. 85-134.
3. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 143-361. URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
4. Public Health 101: Improving Community Health // Riegelman R., Kirkwood B., 3rd ed., Burlington, MA: Jones & Bartlett Learning, 2019. P. 311-348. URL: https://ocw.ui.ac.id/pluginfile.php/11320/mod_resource/content/1/PH-101-19.pdf

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6. World Health Organization. Infection prevention and control. URL:https://www.who.int/health-topics/infection-prevention-and-control#tab=tab_1

Topic 6.
National health care systems: classic models, their advantages and disadvantages. National health care systems in developing countries of Asia, Africa, Latin America

Importance of the topic

Every physician will work in a health care system as a provider of health care services. It is important to understand the principles of organization of different health care systems, their financing, legal regulation, advantages and disadvantages of classic and mixed health care systems.

Purpose of self-preparation:

To study organization of national health care systems including classic models of public, insurance and private health care, to learn the peculiarities of access to health care, coverage of population with essential health care services, general and specific health targets, monitoring and analysis of indicators of efficiency of health care systems in native countries.

Plan of studying the topic

1. Goals of national health care systems, factors influencing their organization and functioning.
2. Participation of government and public regulations in health care systems.
3. Responsibilities of public health authorities at national, state and district levels.
4. Indicators of health care systems. Ranking of countries in the area of efficiency and innovation of the health care system.
5. Classification of modern health care systems.
6. Characteristics of sources of financing health care systems.
7. Characteristics of access and delivery of services in different health care systems.
8. Methods of payment to providers of health care services in different countries. Expenditures and cost control in health care.
9. Resources and facilities in different health care systems.
10. Classic public health care system: British model.
11. Classic health insurance system: German model.
12. Classic private model: the USA model.
13. Health care systems in different countries: Russia, India, Brazil, Sri-Lanka, Maldives, Malaysia, Thailand, Nigeria.

Questions for self-control:

1. What is a health care system?
2. What is the goal of any health care system?
3. What factors influence organization of health care systems?
4. Why do all governments have some degree of involvement in health care?
5. Is it possible to leave health care sector only for private providers? What consequences can be expected?
6. What are the responsibilities of public health care bodies at national level? What is the role of the National Ministries of Public Health?

7. What are the responsibilities of public health care bodies at regional level?
8. What are the responsibilities of public health care bodies at local level?
9. What are the most important indicators of health care systems? Which of them are used to judge about efficiency of health care?
10. Characterize amount and structure of expenditures for health care in your native country.
11. Characterize supply of health care facilities in your native country: physician population ratio, nurse physician ratio, supply of hospital beds.
12. How are national health care systems ranked according to their efficiency and technological development? What is the place of your country in this ranking system?
13. Describe the peculiarities of organization of typical public health care systems like in Great Britain or Scandinavian countries. What are strong and weak points in organization of these health care systems?
14. What countries have universal government-funded health system (single-payer health care system)?
15. What countries have universal public health insurance system?
16. What countries have non-universal health insurance system?
17. What countries have universal public-private health insurance system?
18. What countries have universal private health insurance system?
19. Characterize peculiarities of financing of private, public, insurance or mixed health care system.
20. Characterize peculiarities of access and delivery of health care services in private, public, insurance or mixed health care system.
21. What is the difference between countries with strong central control in public health and less centralized public health systems?
22. How do the means by which providers of healthcare are paid affect access, costs, and the quality of health care?
23. Is cost control important for health care system? Why?
24. What are the differences in resources and facilities of different health care systems?
25. Characterize the specific features of British health care system. Why a general practitioner in this country is called a gatekeeper of the system?
26. What is Semashko model of the Soviet health care system? What were strong and weak points of the system?
27. What are the peculiarities of social insurance model? How is statutory health insurance different from private health insurance?
28. What are the elements of traditional health insurance model? What are strong and weak points of classic health care insurance?
29. What is the role of Sick Funds (insurance companies) in health insurance model?
30. How are the rights of patients protected in different health care systems?
31. What are the peculiarities of the USA model of health care system? What are the government national health insurance programs in the USA?
32. What are innovations of health care management in the USA system of public health?

33. What is specific about public health care systems in developing countries?
34. What are the typical problems in public health care organization in developing countries? How can be these problems solved?

Examples of tests

Select one correct answer.

INSURANCE PREMIUMS FOR NON-WORKING POPULATION ARE PAID BY
regional administrative bodies
working people
employers
non-working people
students

A GOVERNMENT-SPONSORED INSURANCE PROGRAM FOR INDIVIDUALS AND FAMILIES, WHOSE INCOME IS INSUFFICIENT TO COVER HEALTH RELATED SERVICES IN THE USA IS CALLED
Medicaid
Medicare
USAID
Red Cross Organization

A NATIONAL HEALTH INSURANCE PROGRAM FOR THE ELDERLY AGED 65 AND ABOVE AND PEOPLE WITH DISABILITY STATUS IN THE USA IS CALLED
Medicare
Medicaid
USAID
Red Cross Organization

A MEDICAL CARE ARRANGEMENT, IN WHICH MEDICAL PROFESSIONALS AND FACILITIES PROVIDE SERVICES TO SUBSCRIBED CLIENTS AT REDUCED RATES IS CALLED
Preferred Provider Organization
Health Maintenance Organization
Health Insurance Organization
Social Welfare Organization

INSURANCE PLANS THAT REQUIRE PARTICIPANTS TO RECEIVE HEALTHCARE SERVICES FROM AN ASSIGNED PROVIDER - A PRIMARY CARE DOCTOR COORDINATING THE INSURED'S CARE ARE PROVIDED BY
Health Maintenance Organizations
Medicaid
Medicare
Preferred Provider Organizations

AN INSURANCE STRUCTURE THAT PROVIDES COVERAGE THROUGH A NETWORK OF PHYSICIANS IS CALLED
Health Maintenance Organization
a Preferred Provider Organization
a polyclinic

a primary medical care network
INSURANCE CASE IN HEALTH INSURANCE IS
the event that took a place
expected event
unexpected event
predicted event
IN HEALTH INSURANCE THE INSURANCE CASE CAN BE
a disease, a trauma, prophylactic activities
accident, natural disaster
marriage, divorce
death, damage of property
POSSIBLE CRITERIA FOR HEALTH INSURANCE RISK DIFFERENTIATION INCLUDE
age, gender, smoking status, preexisting conditions
poor driving record, driving history
height, weight, gender
socio-economic status
AN INDIVIDUAL OR AN INSTITUTION THAT PROVIDES PREVENTIVE, CURATIVE, PROMOTIONAL OR REHABILITATIVE HEALTH CARE SERVICES IN A SYSTEMATIC WAY TO INDIVIDUALS, FAMILIES AND COMMUNITIES IS CALLED
health care provider
insurance company
sick fund
institutional provider
ONE OF THE FORMS OF RISK MANAGEMENT PRACTICED BY INSURANCE COMPANIES IS
risk pooling
cream-skimming
making contracts
risk reduction
THE AMOUNT OF MONEY AN INDIVIDUAL, POLICY-HOLDER, EMPLOYER OR BUSINESS PAY REGULARLY FOR A HEALTH CARE INSURANCE POLICY IS CALLED
insurance premium
copayment
fees
capitation
MECHANISM TO REDUCE UNNECESSARY USE OF SERVICES BY THE INSURED PEOPLE IN HEALTH INSURANCE SYSTEM IS
copayment
risk sharing
risk pooling
insurance premium

THE AMOUNT OF MONEY THAT THE INSURED PERSON MUST PAY OUT OF POCKET BEFORE THE HEALTH INSURER PAYS FOR A PARTICULAR VISIT OR SERVICE IS CALLED
copayment
insurance premium
charge
tax
IN PRIVATE HEALTH INSURANCE SYSTEM THE CONTRACT BETWEEN AN INSURANCE PROVIDER AND AN INDIVIDUAL CAN BE
renewable (annually, monthly) or lifelong
mandatory or voluntary
chargeable or free
social or commercial
THE NATIONAL HEALTH CARE SYSTEM WITH THE MAIN ROLE OF GOVERNMENT IN FUNDING MEDICAL SERVICES IS CALLED
public
social
planned
municipal
regional
EXAMPLES OF COUNTRIES WITH UNIVERSAL PUBLIC INSURANCE SYSTEM ARE
Japan, Russia, China
India, Kenya, Nigeria
Israel, Switzerland, Netherlands
USA, Uganda
EXAMPLES OF COUNTRIES WITH UNIVERSAL GOVERNMENT-FUNDED HEALTH SYSTEM ARE
Australia, Canada, Malaysia, Sri-Lanka, Brazil
France, Hungary, Iran, South Korea
Chile, Germany, Mexico, Turkey
Israel, Switzerland, Netherlands
BRITISH NATIONAL HEALTH SERVICE IS CHARACTERIZED BY
emphasis is on a primary care provider
accent is on specialist's service
use of Health Maintenance Organizations
organization of private hospitals
IN BRITISH NATIONAL HEALTH SERVICE A GENERAL PRACTITIONER IS CALLED
a gatekeeper of the system
a district doctor
a key stakeholder
a main provider of in-patient services
GERMAN CLASSIC INSURANCE SYSTEM IS CHARACTERIZED BY THE FOLLOWING

development of private health care sector, particularly in hospital service
it is cheap, saving resources
accent is on primary care
capitation and salary are the methods of payment to doctors
GERMAN CLASSIC INSURANCE SYSTEM IS CHARACTERIZED BY THE FOLLOWING
consumer chooses the insurance company, not the medical provider
it is cheap, saving resources
accent is on primary care
capitation and salary are the methods of payment to doctors
ADVANTAGES OF PRIVATE HEALTH CARE SYSTEMS ARE
absence of waiting lists, high quality of medical services
planned character, centralization
effective payment system, low cost of services
equal accessibility of services for different population groups
ADVANTAGE OF PUBLIC HEALTH CARE SYSREM IS
equal accessibility of services for different population groups
free plastic surgery
absence of waiting lists
high quality of services

Information to remember!

Health care system can be defined as the method by which healthcare is financed, organized, and delivered to a population. It includes issues of access (for whom and to which services), expenditures, and resources (healthcare workers and facilities).

Public health care systems include countries with comprehensive programs and strong government control of all aspects (financing, delivery, quality monitoring) of the health care system.

Public Health responsibilities at National level:

- National health planning
- National health financing
- National health insurance
- Assurance of regional equity
- Goals, objectives, targets
- Standards and quality of care
- Research promotion
- Professional standards/licensing
- Environmental protection (legislation, standards, monitoring)
- Food and drug legislation, standards, licensing
- Epidemiology of acute and chronic diseases
- Health status monitoring
- Medical/pharmaceutical industrial development
- Health promotion

- Nutrition and food policy
- Social security and assistance
-

Public Health responsibilities at provincial / state / oblast level:

- Resource allocation
- Health planning
- Epidemiology
- Statistics
- Communicable disease control, immunization, investigation, reporting
- Health promotion
- Education of health professionals
- Licensing and supervision of health professionals and facilities
- Health education
- Quality promotion
- Environmental health monitoring
- Nutrition
- Maternal and child health services
- Mental health

Public Health responsibilities at local level:

- Epidemiology of infectious diseases
- Health education, health promotion
- Environmental protection, sanitation
- Control of communicable diseases (STDs, HIV, TB)
- Preventive prenatal, infant, toddler care
- Search for resources from higher level of government
- Planning and management of services
- Licensing and supervision of health facilities
- Hospitals and home care
- Care of handicapped
- Rehabilitation and long-term care
- Inter-sectoral cooperation
- Mental health
- Social assistance
- Nutrition
- Community participation

Situational tasks

Task №1

Make up a presentation / short report on health care system of your country according to the plan:

1. General characteristics of the system describing public, private, insurance sectors.
2. Primary care services: providers, quality of services, accessibility of care.

3. Hospital sector and specialized services.
4. Efficacy of the system, its weak and strong points.

Recommended literature:

1. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 414-478.
URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
2. Public Health 101: Improving Community Health // Riegelman R., Kirkwood B., 3rd ed., Burlington, MA: Jones & Bartlett Learning, 2019. P. 469-501.
URL: https://ocw.ui.ac.id/pluginfile.php/11320/mod_resource/content/1/PH-101-19.pdf
3. Health: Systems – Lifestyles – Policies (Volume I). Chapter: The role and organization of health care systems // Editors: Burazeri G., Zaletel-Kragelj L., 2nd ed., Jacobs Verlag, Lage, Germany, 2013. P. 3-14.
URL: https://www.philadelphia.edu.jo/academics/aalraoush/uploads/Health-Systems-Lifestyle-Policies.pdf
4. Noble J., Jason L. Comparison of Public and Private Health Care Systems // DOJA, 2002.
URL:https://www.researchgate.net/publication/50855063_A_Comparison_of_Public_and_Private_Health_Care_Systems
5. Busse R., Blumel M. Germany: Health system review // Health Systems in Transition, Vol.16, №2, 2014. P. 1-296.
URL: https://apps.who.int/iris/bitstream/handle/10665/130246/HiT-16-2-2014-eng.pdf?sequence=5&isAllowed=y

Topic 7.
Basics of Health Economics. Macroeconomics of health care. Methods of economic evaluation in Public Health

Importance of the topic

Recently Health Economics has become a very important part of Public Health. Even it is a relatively young discipline; methods of Health Economics are used in different kinds of public health practice. In the market economy conditions medical services acquire all the characteristics of goods. Health Care Economics studies the relation of Health care services with other branches of economy. It is necessary to know the principles of Health Economics to understand the strategies of national and regional health care policy.

Health economics is important because it focuses on how the economic behavior of stakeholders and recipients affects the quality and cost of medical care. It includes how people pay for medical care, how those payments are processed, and how health systems around the world can be restructured and improved.

It is necessary to know the basics of Health Economics for future physicians because this science examines and finds system-based solutions to make health care more equitable, accessible, and affordable for all. Health Economics tries to find a balance in meeting interests and satisfying needs of health care providers, patients, insurance companies, government agencies, corporations, and public organizations that all play an essential role in health care spending.

Purpose of self-preparation:

To study the basic questions of Health Economics, to learn the methods of economic evaluation and their application for solution of different practical public health problems.

Plan of studying the topic

1. Health Economics as a science, place and role in Public Health.
2. Reasons for growing health care expenditures.
3. Macroeconomics and microeconomics of health care. Factors that distinguish Health Economics from other areas.
4. Health and disease as economic categories.
5. Health care market: demand and supply for health care services. Price elasticity in health care.
6. Ways to influence behaviour of consumers of health care services.
7. Ways to influence behaviour of suppliers of health care services.
8. Costs of diseases: direct and indirect.
9. Burden of diseases – definition and methods of measurement.
10. Effectiveness and efficiency in Health Care and its indicators. Medical, social, and economic efficiency in health care.
11. Concept of Economic Evaluation.

12. Types of economic evaluation: cost-minimization analysis, cost-effectiveness analysis, cost-benefit analysis, cost-utility analysis. Their application for public health practice, advantages and disadvantages.

Questions for self-control:

1. What is the science of Health Economics? What is it history?
2. What is the main subject of Health Economics?
3. What are the reasons for growing costs in health care?
4. What macroeconomic indicators of health care systems do you know?
5. What is health from the point of Health Economics? How do we put a value on health?
6. Is it easy to convince the national governments to invest more money in health?
7. Is investment of money to health care systems always rational?
8. What factors influence health, besides health care?
9. What is health care market? Why is it imperfect from the point of Health Economics?
10. What influences the supply and demand for health care?
11. What is health seeking behavior? What influences it?
12. What is price elasticity of demand?
13. What is price elasticity of supply?
14. What are the ways to influence behavior of consumers of health care services?
15. What are the ways to influence behavior of suppliers of health care services?
16. What are some alternative approaches to health care production and delivery?
17. How can we improve the ways in which we plan, budget, and monitor health care?
18. What are specific factors in Health Economics that make it different from other branches of Economy? Explain the following: asymmetry of information, uncertainty, externality, barriers to enter the market, extensive government intervention.
19. What methods of cost minimization are used by health insurance companies?
20. What is ‘moral hazard’ applying to people who got health insurance?
21. What is ‘adverse selection’ in health insurance market?
22. What are direct costs of diseases?
23. What are indirect costs of diseases?
24. How to measure the burden of diseases?
25. What are Quality-Adjusted Life Years? How are they calculated?
26. What are Disability-Adjusted Life Years? How are they calculated?
27. What are the years of potential life loss?
28. Describe the global burden of diseases by cause. What causes are responsible for the largest burden? Has the situation changed throughout the last 25 years?
29. What are the risk factors contributing the most to disease burden?
30. What is economic evaluation?
31. What is cost-minimization analysis?
32. What is cost-effectiveness analysis?
33. What is cost-benefit analysis?
34. What is cost-utility analysis?
35. How are decisions made in public health on the base of economic evaluation?

36. What is medical efficiency of health care service? What is social efficiency of health care service?

Information to remember!

Cost minimisation analysis compares the costs of equivalent consequences of two or more interventions. The analysis therefore focuses on costs alone, and the cheapest option is chosen.

Cost effectiveness analysis uses for comparison outcomes measured by epidemiological or clinical terms (for example, life years gained, deaths prevented) that are common to competing interventions). For this reason it is the most common type of analysis and is used to compare drugs or programs which have a common health outcome (for example, reduction in blood pressure, life years saved). Results are usually presented in the form of a ratio (for example, costs per life year gained). For example, it has been estimated that coronary care units cost £4900 per life year saved compared with neonatal intensive care units at £11 500 per life year saved.

Often, intermediate outcomes such as cases detected, reduction in cholesterol are measured and it is important to ensure that these intermediate measures have clinical meaning in terms of long term outcome for patients.

Cost utility analysis uses health state values based on individual preferences (for example, quality adjusted life years gained). An approach which is gaining in importance due to the need to decide between different interventions at a national level and the importance placed on quality of life. Many methodological problems remain in assessment of quality of life of patients with different diseases.

Often interventions impact both on quality and quantity of life. A cost utility analysis can be used to assess costs and benefits of interventions where there is no single outcome of interest and is useful comparing different programs across different treatment areas.

The most frequently used measure is the quality adjusted life year (QALY). Benefits are measured based on impact on length and quality of life to produce an overall index of health gain. A health state is valued between 0 (worst health) and 1 (best health) combined it with the length of time in that state. For example, a drug that yields an improvement in health state value of 0.6 over a period of 10 years would yield 6 QALYs. It has been estimated that coronary artery bypass grafting costs £2000 per QALY compared with £1100 for hip replacement. QALYs reflect people's preferences for different health states but their use remains contested in a number of areas.

When acting on the results of cost effectiveness and cost utility studies, if two treatments A and B are compared and costs are lower for A and outcomes better, then treatment A will be preferable. If, as is more commonly the case with a new drug, costs are higher for one treatment, but benefits are higher too, it is necessary to calculate how much extra benefits is obtained for the extra cost. A decision then needs to be made as to whether this addition in benefit is worth paying for.

Cost-benefit analysis compares all outcomes valued in monetary units. Attempts are made to value all the costs and consequences of an intervention in monetary terms. If the benefits are less than the costs then the intervention is acceptable. For example, a study of the impact of a triptan at a cost of £4 per attack in

the treatment of migraine found an economic gain in terms of work absence saved of £12.50 compared with placebo. However, the data requirements for this approach are often large and methodological issues around the valuation of non-monetary benefits such as lives saved makes this method problematic.

Examples of tests.

Select one correct answer.

METHOD OF ECONOMIC EVALUATION OF HEALTH TECHNOLOGIES THAT TAKES INTO CONSIDERATION QUALITY OF PATIENTS' LIFE IS
cost-utility analysis
cost-effectiveness analysis
cost-benefit analysis
cost-minimization analysis

IF IT IS INAPPROPRIATE TO MONETIZE HEALTH EFFECT WHILE PERFORMING ECONOMIC EVALUATION OF HEALTH CARE SERVICES WE SHOULD USE
cost-effectiveness analysis
cost-utility analysis
cost-benefit analysis
cost-minimization analysis

THE MEASURE OF HEALTH CARE INTERVENTION EFFECT IN HEALTH ECONOMICS CAN BE
number of disease cases prevented by vaccination program
number of physicians
number of hospital beds
number of smoked cigarettes

THE MAXIMUM PRICE AT OR BELOW WHICH A PATIENT WILL DEFINITELY AGREE TO GET ONE UNIT OF A HEALTH CARE SERVICE IS CALLED
willingness to pay
health care service demand
health care service supply
cost of health care service

IF BENEFITS AND COSTS OF THE STUDIED HEALTH CARE INTERVENTION ARE EXPRESSED IN MONETARY TERMS AND ARE ADJUSTED FOR THE TIME VALUE OF MONEY IT IS A METHOD OF ECONOMIC EVALUATION CALLED
cost-benefit analysis
cost-effectiveness analysis
cost-utility analysis
cost-minimization analysis

A TOOL USED IN PHARMACOECONOMICS TO COMPARE THE COST PER COURSE OF TREATMENT WHEN ALTERNATIVE THERAPIES HAVE DEMONSTRABLY EQUIVALENT CLINICAL EFFECTIVENESS IS CALLED
cost-minimization
cost-benefit analysis

cost-effectiveness analysis
cost-utility analysis
FEATURE OF HEALTH CARE MARKET THAT PATIENTS OFTEN DO NOT KNOW WHAT THEY NEED AND CANNOT EVALUATE THE TREATMENT THEY ARE GETTING FROM PHYSICIANS IS CALLED
asymmetric information
externality
uncertainty
a third-party agent
ONE OF THE MOST IMPORTANT MACROECONOMIC INDICATORS OF HEALTH CARE SYSTEMS IS
percentage of Gross Domestic Product spent on health care
life expectancy
physician – population ratio
average salary of physicians
THE PROBLEM OF HEALTH INSURANCE MARKET WHEN PEOPLE WITH GREATER HIDDEN HEALTH PROBLEMS ARE MORE LIKELY TO BUY HEALTH INSURANCE THAN ARE HEALTHY PEOPLE IS CALLED
adverse selection
moral hazard
externality
a third-party agent
EXAMPLE OF EXTERNALITY AS A SPECIFIC FACTOR IN HEALTH CARE MARKET IS
contagiousity of infectious diseases
uncertainty of disease development and associated expenses
presence of a patient's health insurer
the knowledge gap between a physician and a patient
TYPES OF MEDICAL CARE, WHICH ARE MORE PRICE SENSITIVE, LIKE PREVENTIVE CARE AND PHARMACY BENEFITS ARE CALLED
price elastic
price inelastic
highly demanded
undersupplied
THE MAIN REASONS FOR CONTINUOUS INCREASE OF HEALTH SPENDING IN MANY COUNTRIES IN THE LAST DECADES ARE
aging of population, expensive modern medical technologies
increase of income of population, more priority of health
poor quality of life, more incidence and prevalence of diseases
increase of birth rate, growth of population

Situational tasks

Task №1

Table 8 shows the cost-effectiveness of treating raised cholesterol with statins at various levels of population risk. [Source: Kernick DP Introduction to health

economics for the medical practitioner *Postgraduate Medical Journal* 2003;79:147-150]. URL: http://dx.doi.org/10.1136/pmj.79.929.147.

Table 8

Cost effectiveness of treating patients with raised cholesterol with statins at different annual risks of cardiovascular event

Annual risk of cardiovascular event, %	Cost of 1 life year saved (£)
4,5	5100
3,0	8200
2,0	10700
1,5	12500

1. What method of economic evaluation is used in the task?
2. What risk groups should be targeted from the point of Health Economics?

Task № 2

Table 9 shows the cost-effectiveness of selected health interventions. [Source: Kernick DP Introduction to health economics for the medical practitioner *Postgraduate Medical Journal* 2003;79:147-150]. URL: http://dx.doi.org/10.1136/pmj.79.929.147.

Table 9

Cost effectiveness of selected health care interventions

Intervention	Cost of 1 life year saved (£)
Control of blood pressure	1000
Counseling for activities of healthy life style	3000
Coronary care units	4900
Screening for breast pathology	8400
Cervical screening	9000
Neonatal intensive care	11500
Hemodialysis	27000

[Source: Kernick DP Introduction to health economics for the medical practitioner *Postgraduate Medical Journal* 2003;79:147-150.]
URL: http://dx.doi.org/10.1136/pmj.79.929.147.

1. What method of economic evaluation is used in the task?
2. What health care interventions are the most cost-effective?
3. What practical decisions can be made by Public Health authorities on the base of this economic evaluation?
4. Give examples of other cost-effective interventions in public health.

Task №3

Cost of treatment A is 20 000 US dollars, it gives raise in life expectancy with patients with the oncologic pathology 4,5 years. Treatment B has cost of 10 000 US dollars and gives raise in life expectancy 3,5 years. The average utility of 1 year of life gained by treatment A is 0,8. The average utility of 1 year of life gained by treatment B is 0,9.

a) Perform economic evaluation of two treatment methods by cost-effectiveness analysis.
b) Calculate cost of quality-adjusted life year (QALY) gained by treatment A and treatment B.
c) Draw conclusion about the preferable method of treatment and say, which treatment A or B would be included by Public health authorities in the national basket of services.

Task №4

Public health program of vaccination against influenza covered 50 000 people. Cost of vaccination of 1 person was US$ 0,5. Incidence of influenza in non-vaccinated community would be 175 per 1,000 population. The cost of treatment of 1 case is US$ 25.

Calculate the following:

a) Total cost of the vaccination program.
b) Number of prevented cases by vaccination program.
c) Perform cost-effectiveness analysis (calculate the cost of 1 prevented case).
d) Perform cost-benefit analysis (calculate the savings for 1 invested US$).
e) Characterize the intervention program from the point of rational use of health care resources.

Task №5

Calculate the coefficient of integral efficiency of a physician's work on the base of results: 103 patients were treated in a hospital department, the planned result was achieved in 92 patients, the tactics of diagnostics and treatment was recognized as correct by the experts in 96 patients. Satisfaction of patients with medical service was achieved in 86 patients. The planned cost of 1 case treated in hospital was 12 000 RU, the actual cost of 1 case was 12450.

Recommended literature:

1. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 789-794. URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
2. Global Health Expenditure Database. Geneva: World Health Organization URL:https://apps.who.int/nha/ database, accessed 29 September 2022.
3. Handbook of Health Economics // M.Pauly, T. McGuire,P. Barros, 1st ed., 2011, North Holland. 1152 p.

Topic 8.
Microeconomics of health care institutions. Methods of payment to physicians and reimbursement of hospitals for medical services in different Health care systems. Marketing of medical services in commercial and public sectors

Importance of the topic

Microeconomics of medical institutions determines technological and organizational peculiarities of health care process. Doctors as providers of medical services promote their services at health care market. Physicians must know the cost-containment of medical services, as well as strategies and peculiarities of marketing of health care. It is important to understand how the way of payment to health care providers influences the quantity and quality of consumed medical services.

Purpose of self-preparation:

To study the types of costs in medical institutions, the current cost problems and ways to control expenditures in commercial and non-commercial medical institution, methods of payment to medical providers, their advantages and disadvantages.

Plan of studying the topic

1. Microeconomics of health care institutions. Classification of medical institutions by types of property and legal entities.
2. Types of costs in a medical institution.
3. Break-even analysis in health care institutions.
4. Ways to reduce fixed and variable costs in a medical institution.
5. Profit of medical institutions. Ways to maximize profit in a medical institution.
6. Problem of cost control in health care institutions and ways to solve it.
7. Methods of payment to physicians: salary, capitation, fee-for-service, target payment.
8. Reimbursement of hospital services: per diem, per a case, fee-for-service, prospective budget.
9. Social and commercial marketing in public health.
10. Product, place, promotion, price as key elements of marketing.
11. Regulations of health care market.
12. SWOT-analysis and its application for medical marketing.

Questions for self-control:

1. What is microeconomics of health care? What are practical questions and tasks of microeconomics?
2. What are fixed costs in a medical institution?
3. How can be fixed costs reduced?
4. What are variable costs in a medical institution?
5. How can be variable costs reduced?
6. Make up a graph for fixed and variable costs. Make up a graph of revenues for health care services.

7. What is break-even point? Is it necessary to achieve it for every health care provider?
8. How can medical institutions get profit?
9. What is the conflict of interests between Public health system, health care providers and financial institutions like insurance funds?
10. What is depreciation of medical equipment? What are the methods of computing depreciation of expensive diagnostic equipment?
11. What are the ways to reduce high labour costs in health care institutions?
12. What are the ways to reduce inefficient patient flow?
13. What are the ways to reduce high costs of new technologies?
14. What is salary as a method of payment to physicians? In what health care systems is it widely used? What are its advantages and disadvantages?
15. What factors determine salary size for medical professionals? Is the system of salaried doctors efficient for labour productivity?
16. What is fee-for-service payment? In what situations is it widely used? What are its advantages and disadvantages? How can it induce supply of medical services?
17. What is capitation? What providers of health care services are usually paid by capitation? What are its advantages and disadvantages?
18. What is the difference between active and passive capitation?
19. Can per capita payment vary across patients' groups? Is it fair to make adjustment of per capita payment for different population groups?
20. What health care services are promoted by per capita payment?
21. What is target payment? What are the typical targets for physicians to receive target payment?
22. What is co-payment for medical services? Why is it used?
23. What is the meaning of 'reimbursement'?
24. If a medical service is free of charge for patients, does it mean it is free for a health care provider?
25. What is prospective and retrospective reimbursement of health care expenditures?
26. What is per diem reimbursement of hospital services? Why is it called a historical method?
27. Why is it not efficient for public health system to reimburse every day of stay in hospital?
28. What types of costs can be reimbursed per a day?
29. What is reimbursement per a case? What are its advantages and disadvantages?
30. What is a system of patients' classification based on diagnosis? What is the basis for reimbursement by Diagnosis-related groups?
31. Is the system of fee-for-service reimbursement widely used in hospitals? What hospital services can be reimbursed by fee-for-service?
32. What is the meaning of global hospital budget? What costs are reasonable to cover by annual budget?
33. Who gives funds for prospective budget of medical institutions?
34. Is it easy to spend rationally annual hospital budget?
35. What is the difference between commercial and social marketing? What is the purpose of social marketing in public health?

36. What are the principles of marketing in health care? What is market segmentation?
37. What are 4 'P' of marketing? What should be attractive for consumers in medical products or services?
38. What are methods of marketing research?
39. What place is preferable for health care services supply? What are requirements for area and place arrangement of outpatient clinics, hospitals, and rehabilitative centers?
40. What is price competition in a medical market? Does price determine much amount of demanded medical services? In what health care services is price a very important factor determining the demand for a service?
41. How is promotion of health care services done? What is the role of health information and advertisement?
42. Can be medications, vaccines and medical services advertised in mass media and public places? What regulations are used in a medical market?
43. What is SWOT-analysis? How is it applied for the purposes of medical marketing?

Information to remember!

Healthcare marketing is the process of attracting and engaging patients, delivering health information and interventions and guiding them through their healthcare journey. It also refers to the tools and techniques used to increase brand awareness, attract patients and keep them engaged. The objective of healthcare marketing is to:

- Deploy marketing strategies that will draw attention to your brand / health care institution.
- Deliver valuable resources and content to patients.
- Protect and promote the health of patients.
- Improve patients' healthcare experience.
- Increase patients' satisfaction and build loyalty.

<u>The main principles of marketing in Health care are the following:</u>

1. Medical institutions receive the incentives for their activities from different markets in Health care system (markets of medical services, pharmaceuticals, orthopedic devices, medical equipment, healthy food, etc.).
2. While developing a new medical or health care service for population or improving the existing service, a medical institution finds out if there is demand for this service, to which segment it is necessary to provide the service and if it can be consumed / purchased at the planed price.
3. Medical institution not only detects and satisfies the demand in medical services, but also forms it in the necessary directions.
4. Medical institution takes into account not only the existing needs of population for different kinds of diagnostics, treatment, rehabilitation, etc., but also the needs for services which can arise with the development of new medical technologies and new forms of labor organization (Ex.: laparoscopy used to diagnose infertility, or during the operative treatment of cholecystitis).

5. In order to make profit in a long-term prospective, with orientation at long-term presence in the market it is necessary to differentiate the more specific target segments of consumers of medical services.

There are four stages of consumer's behavior – awareness, active evaluation, decision-making, and post-purchase**.** Consumer's behavior model is summarized in table 10.

Table 10

Model of consumer's behavior

<table>
<tr><th>Motivating factors of marketing</th><th>Other external factors</th><th colspan="2">"Black box" of consumer's mind</th><th>Consumer's response</th></tr>
<tr><td rowspan="2">A good or service</td><td rowspan="2">Economic</td><td rowspan="5">Consumer's characteristics</td><td rowspan="5">Process of making a decision about purchasing a service</td><td>Choice of the product / service</td></tr>
<tr><td>Choice of the brand / trademark</td></tr>
<tr><td>Price</td><td>Scientific</td><td>Choice of the provider</td></tr>
<tr><td>Method of supply</td><td>Political</td><td rowspan="2">Choice of time for purchasing</td></tr>
<tr><td>Sale / supply promotion</td><td>Cultural</td></tr>
</table>

Achieving success in healthcare marketing requires using multiple marketing tactics and channels, including:

- Websites
- Social media
- Paid advertising
- Search Engine Optimization (SEO)
- Email marketing
- Video marketing
- Content marketing.

SWOT analysis is a marketing technique that enables health care providers to identify strengths, weaknesses, opportunities and threats related to the healthcare industry. Having a clear understanding of the market can help:

- To profile your competitors and identify what makes them stand out
- To spot growth opportunities within health care sector
- To position your medical institution to stay ahead of the competition
- To understand the needs of your target patients and serve them better.

$$\textbf{Break Even Point} = \frac{\text{Fixed Cost}}{\text{Reimbursement per 1 service} - \text{Variable Cost per 1 service}}$$

$$\textbf{Target profit} = \frac{\text{Target level of profit} + \text{Fixed Cost}}{\text{Reimbursement per 1 service} - \text{Variable Cost per 1 service}}$$

Examples of tests

Select one correct answer.

THE AMOUNT OF SERVICES THE PROVIDER NEEDS TO SUPPLY, AT WHICH TOTAL COST AND TOTAL REVENUE ARE EQUAL, IS CALLED
break-even point
equilibrium quantity
market quantity
demand quantity

WHILE MEDICAL INSTITUTION PROVIDES SERVICES AT THE LEVEL OF BREAK-EVEN POINT, ITS PROFIT IS EQUAL
zero
100%
50%
30%

FIXED COSTS IN A MEDICAL INSTITUTION ARE
administrative costs
direct material cost
fee-for-service paid labor costs
cost of medications and food

VARIABLE COSTS IN A MEDICAL INSTITUTION ARE
patient care supplies
maintenance of the building
salaried labor costs
taxes

SUPPLY OF MEDICAL SERVICES IN THE REGIONAL HEALTH CARE MARKET IS DETERMINED BY
number of licensed physicians
morbidity rates
birth rate
average income of people

FIXED, PRE-ARRANGED MONTHLY PAYMENTS RECEIVED BY A PHYSICIAN, PER PATIENT ENROLLED IN A HEALTH PLAN, REGARDLESS OF HOW OFTEN THE PATIENT NEEDS SERVICES, IS CALLED
capitation
diagnosis-related groups
salary
fee-for-service
target payment

CAPITATION PAYMENT FOR EACH INDIVIDUAL CAN VARY ON THE BASE OF SUCH CHARACTERISTICS AS
age, sex and health status
genetic and family history
marriage status and body mass index
ethnicity and race

PHYSICIANS WORKING UNDER CAPITATION PLANS GET INCENTIVES

to focus on preventive health care
to use expensive high-technological treatment
to provide more diagnostic services
to use unnecessary treatment services
METHOD OF PAYMENT TO DOCTORS, WHICH GIVES AN INCENTIVE FOR PHYSICIANS TO PROVIDE MORE SERVICES IS
fee-for-service
capitation
diagnosis-related groups
salary
SALARY OF PHYSICIANS CAN DEPEND ON
specialty, work experience and qualification
quality of provided services
patients' satisfaction with provided services
quantity of provided services
REIMBURSEMENT OF PROVIDERS OF HOSPITAL SERVICES AT A FIXED RATE PER DISCHARGE BASED ON DIAGNOSIS, TREATMENT AND TYPE OF DISCHARGE IS CALLED
the Diagnosis-Related Groups system
fee-for-service
capitation
per diem
METHOD OF REIMBURSEMENT THAT GIVES HOSPITALS A STRONG INCENTIVE TO INCREASE THE NUMBER OF ADMISSIONS AND TO EXTEND THE LENGTH OF STAY IS
per diem
the Diagnosis-Related Groups system
fee-for-service
capitation
A FINANCIAL PLAN OF HOSPITAL FOR A YEAR THAT INCLUDES COSTS AND EXPENSES IS CALLED
a budget
a schedule
a calendar plan
a marketing program
SWOT ANALYSIS IN PUBLIC HEALTH MARKETING IS FOCUSED ON
internal and external factors related to public health project planning
internal factors related to public health project planning
external factors related to public health project planning
strengths and weaknesses of the competitors
IF A MEDICAL PROVIDER DESIGNS SPECIAL SERVICES FOR CHILDREN AND ADULTS IT IS CALLED
differentiated marketing
diversification marketing
concentrated marketing

refreshing marketing
SITUATIONAL ASSESSMENT FOR STRATEGIC PLANNING IS CALLED
SWOT analysis
4 P-s analysis
microeconomic analysis
macroeconomic analysis
IF HOSPITAL HAS MODERN DIAGNOSTIC EQUIPMENT AND PROVIDES HIGH-TECHNOLOGICAL SERVICES IT IS
a strength of organization
a weakness of organization
a opportunity of organization
a threat of organization
IF HOSPITAL HAS ESTABLISHED A SUCCESSFUL REFERRAL PROGRAM WITH OTHER PHYSICIANS IT IS
an opportunity of organization
a strength of organization
a weakness of organization
a threat of organization
IF A CLINIC HAS HIGH STAFF TURNOVER IT IS
a weakness of organization
an opportunity of organization
a strength of organization
a threat of organization
IF THERE IS A STIFF COMPETITION BETWEEN SEVERAL MATERNAL CLINICS IN THE DISTRICT IT IS
a threat of organization
a weakness of organization
an opportunity of organization
a strength of organization

Situational tasks

Task №1

Fixed costs in the hospital department are 100 000 US dollars per a year. Reimbursement rate per 1 surgical operation on cholecystectomy is 2 000 US dollars. Variable costs per 1 patient are 400 US dollars.

a) Explain what is included in fixed costs and what is included in variable costs.
b) How many patients are needed to be done the studied surgery to break even? Will hospital continue providing this service if number of patients is exactly equal to the break-even point?
c) How many patients are needed to earn 60 000 US dollars profit per a year? What can hospital do to achieve the target level of profit?

Task № 2

Health maintenance organisation (HMO) registers people for getting health insurance; services include primary health care and limited range of specialized out-patient services. Annual premium to pay for every person joining this HMO is 96 US dollars. The expected expenditures per 1 person in a year with estimated average

number of sickness cases equal 2 is 64 US dollars. Fixed costs per a year to cover payment to health personnel, renting the building, taxes are 32 000 US dollars.
a) Explain the model of Health maintenance organisation and describe its advantages.
b) Calculate minimum number of people necessary to register for this HMO to cover all expenses.
c) This HMO is planning to increase the variety of provided services in the near future, for that it needs to buy new equipment and to hire more personnel. These activities will take another 20 000 US dollars. How many people are necessary to register for the HMO to achieve this purpose?
c) This HMO plans to increase the variety of provided services in the near future, for that it needs to buy new equipment and to hire more personnel. These activities will take another 20 000 US dollars. How many people is it necessary to register for the HMO to achieve this purpose?

Recommended literature:

1. Textbook of Preventive and Social Medicine // Mahajan & Gupta 4th ed., Jaypee Brothers Medical Publishers, 2013. P. 524-530.
URL:https://drive.google.com/file/d/1MqPqPEXt3fjBVG0QvxSNdeFjJn_uWpQZ/view
2. Health: Systems – Lifestyles – Policies (Volume I). Chapter: The role and organization of health care systems // Editors: Burazeri G., Zaletel-Kragelj L., 2nd ed., Jacobs Verlag, Lage, Germany, 2013. P. 15-25, 341-365.
URL: https://www.philadelphia.edu.jo/academics/aalraoush/uploads/Health-Systems-Lifestyle-Policies.pdf
3. Health Care Management // ed. Walshe K., Smith J., 2nd ed., Open University Press, 2011. P. 37-79.

Topic 9.
Health care management in public health. Management in a medical institution. Functions of management. Quality control of health care services

Importance of the topic

About 10-20% of physicians perform managerial functions. Doctors working in health care system must understand the main strategies and functions of management. A special attention should be paid to the problem of medical errors and quality control in health care systems. It is an essential task of public health to improve quality of medical services and minimize patients' health risks while they receive health care services in medical institutions.

Purpose of self-preparation:

To study the methods of administrative and managerial activities in public health, objects and subjects of management, principles, functions and strategies of management, kinds and mechanisms of quality control in health care systems.

Plan of studying the topic

1. Management as a science, kinds of administration activities in public health and clinical practice.
2. Methods of management in medical institutions.
3. Kinds of management strategies of medical institutions.
4. Functions of Health care management.
5. The problem of medical service quality control in different health care systems.
6. Dimensions of quality: structure, process, outcome.
7. Levels of quality control in Health care.
8. Cost control in Health care. Medical-economic standards, diagnostically related groups (DRG).
9. External and internal control of medical service quality.
10. Discussion on Quality Assurance: Continuous quality improvement (Total Quality Management).

Questions for self-control:

1. What is management?
2. What are the subjects of management? What are the objects of management?
3. How are managerial responsibilities distributed between different professionals? What physicians perform managerial functions?
4. What are the methods of management used in medical institutions?
5. What are the kinds of management strategies used of medical establishments?
6. How is evaluation of external and internal factors of medical institutions carried out?
7. What are the functions of management in a medical institution?
8. How is planning organized in medical institutions? What is planned in out-patient institutions? What is planned in hospitals?

9. What is “estimate of expenditures and revenues”?
10. What is a financial plan of a medical institution?
11. How are the health expenditures planned?
12. What does the function of organization in a medical institution mean?
13. What does the function of communicating in a medical institution include?
14. What are the systems of personnel promotion in management?
15. What is material and non-material motivation of health care professionals?
16. What does the function of monitoring / control in a medical institution include?
17. What are the kinds of control arranged in medical institutions?
18. Who performs internal and external control in medical institutions?
19. Explain how the methods of management methods based on behavioural sciences can be used in practice of medical institutions?
20. What is the principle of quantitative methods of management?
21. Why are the problems of medical care quality assurance important nowadays?
22. How are the problems of medical service quality assurance solved?
23. Give the definition of quality of medical services. Who can provide expertise of medical service quality?
24. What is the relation between quality and cost-effectiveness of medical care?
25. What are the indicators of medical service quality in different types of medical institutions?
26. What are the criteria of high-quality medical services?
27. What are the dimensions of quality control in health care systems?
28. How is control of structural component of quality of healthcare services provided?
29. What does the technological component of quality include?
30. What does the outcome evaluation mean?
31. What are the levels of medical audit (quality assessment)?
32. Who are the providers of medical aid quality control in medical institutions?
33. What does the utilization review include?
34. What does the process of accreditation mean? What is its purpose?
35. What is the procedure of “certification”?
36. What does licensure mean?
37. What are the economic aspects of medical care quality control?
38. What is the function of medical-economic standards?
39. Who sets the medical-economic standards?
40. Where are the Diagnosis related groups used?
41. Characterize the Continuous Quality Improvement system. What is its origin?
42. What are the steps of the process of developing clinical guidelines?
43. What are the peculiarities of Total quality management in different countries?
44. What are the main factors of patients’ satisfaction with medical care quality?
45. What are medical errors? Are they avoidable?
46. How to minimize medical errors in clinical practice?
47. What are the typical reasons for medical errors?
48. How to provide protection of patients’ rights in the system of medical care quality control?

49. How to provide civil responsibility insurance of medical professionals?

Information to remember!

Management is a science and art that helps to implement a mission of the organization and achieve the purposes using the capital, labor, behavioral motivation, and intellectual human resources to make employees efficient and productive professionals.

Healthcare management is in charge of the entire healthcare organization while healthcare administration takes care of the staff and employees in a specific department. Healthcare managers focus on the needs and direction of a whole medical institution, while administrators focus on efficacy of work of a specific unit. Strategic management works out the strategy of the organization's development. Operative management works out the tactics and operative measures to realize the strategy of the health care institution.

Functions of management include planning, organizing, motivating (directing) and controlling. Health care managers take into account efficiency and efficacy of work. Low resource waste is the result of high efficiency, while high goal attainment is the proof of high effectiveness.

Continuous Quality Improvement (CQI) in healthcare is a process of identifying, analysing, and improving patient care outcomes and organizational performance. It involves a structured approach to problem-solving, data collection, and analysis to implement changes and enhance the quality of care. Quality control is focused on three dimensions – structure, process and outcome. The structure dimension evaluates the quality of input resources by certification, accreditation, and licensure. The process control is implemented by routine monitoring of everyday work by the heads of departments with necessary corrections done if necessary. Control of the outcome can be based on expert review of medical records and patients' expertise.

CQI is implemented by always asking "How are we doing?" and "Can we do it better?" The goal is to improve healthcare by identifying problems, implementing changes to fix those problems, monitoring whether the changes help, and making further adjustments if they aren't getting the desired results.

Quality control of health care services is done by using clinical guidelines and standards of care. Clinical Care Standard is a set of statements about the treatment a patient can expect when he or she seeks treatment for a specific condition or health problem. Health care services must be person-centred, safe, accessible and timely, effective, appropriate, delivered by qualified professionals, using optimum amount of resources without duplication or omission of services.

Examples of tests

Select one correct answer.

WHO PERFORMS MANAGERIAL FUNCTIONS IN A MEDICAL INSTITUTION?

a doctor-in-chief, heads of the departments, senior nurses

physicians, nurses, accountants

nurse assistants, technicians

physicians of diagnostic units

FUNCTIONS OF MANAGEMENT INCLUDE
planning, organization, motivation, control
surgery, internal medicine, obstetrics, pediatrics
prevention, diagnostics, treatment, rehabilitation
making up statistics and summarizing epidemiological data
WHAT IS PLANNED IN A HOSPITAL FACILITY?
bed count and bed count days
number of visits
number of discharges
number of recoveries
WHAT IS PLANNED IN AN OUT-PATIENT FACILITY?
number of out-patient visits
number of bed-count days
number of patients
number of births
WHAT IS SPECIFIC ABOUT ORGANIZATION OF INFECTIOUS HOSPITALS?
isolation of contaminated patients, surveillance of nosocomial infections
referral system from lower to upper levels
quality control is only internal
special days are selected for preventive visits
WHAT IS SPECIFIC ABOUT ORGANIZATION OF PEDIATRIC OUT-PATIENT CARE?
separate entrances for healthy and sick children
quality control is only external
adults are not allowed to enter
school classes are arranged
EXAMPLES OF EFFECTIVE ORGANIZATION IN HEALTH CARE SYSTEM INCLUDE
waiting lists for elective hospitalization, electronic appointment system
social and professional benefits
moral and material motivation
quick admission and quick discharge
PROMOTION OF HEALTH CARE PROFESSIONALS CAN BE DONE BY
moral and material methods
online and offline methods
a chief-doctor or a deputy doctor-in-chief
rotation from one institution to another
DIMENSIONS OF QUALITY CONTROL IN HEALTH CARE SERVICES INCLUDE
structure, process, outcome
hospital care and out-patient care
prevention and treatment
palliative care and rehabilitation
CONTINUOUS QUALITY MANAGEMENT ORIGINATED IN
Japan

The USA
Germany
France
PRIVATE HOSPITALS ARE RUN EFFECTIVELY BY THE METHODS OF
decentralized management
centralized management
horizontal management
strict administration
LICENSURE OF MEDICAL INSTITUTIONS IS THE EXAMPLE OF QUALITY CONTROL AT DIMENSION OF
Structure
Process
Outcome
Process and outcome
QUALITY CONTROL OF MEDICAL SERVICES CONDUCTED BY A HEALTH INSURANCE FUND IS CALLED
External control
Internal control
Accreditation
Licensure
DISCUSSION OF FATAL CASES TREATED IN HOSPITAL WITH IDENTIFICATION OF MEDICAL ERRORS BY CLINICAL EXPERTS IS AN EXAMPLE OF
Internal quality control
External quality control
Financial cost control
Social quality control
INTERNAL CONTROL OF QUALITY IN MEDICAL INSTITUTIONS IS PROVIDED BY
Physicians and nurses
Heads of the departments, doctor-in-chief
Patients and relatives of patients
Regional Public Health Authorities
EXTERNAL CONTROL OF QUALITY IN A REGIONAL HOSPITAL IS PROVIDED BY
Regional Public Health Authorities
Physicians and nurses
Heads of the departments, doctor-in-chief
Patients and relatives of patients
QUALITY CONTROL IN HEALTH CARE SYSTEM IS BASED ON
Medical and economic efficacy
Medical efficacy
Economic efficacy
Social efficacy
ACCREDITATION OF MEDICAL ORGANISATIONS IS PROVIDED USING

self-assessment and external peer assessment
only self-assessment
tools of funding organisations
experts' opinion from Public Health Ministy

Situational tasks

Task 1

Make up a business-plan of your private medical enterprise for a certain region of your native country.

1) Define your business concept – mission (what you want to achieve by your activities besides profit: improvement of health of the community, reduction of mortality, increase of survival, etc.), long-term purposes, short-term purposes.
2) Describe the kinds of medical services you are going to provide, their advantages, peculiarities, specific features.
3) Characterize your potential consumers (patients), the necessary facilities (equipment), presupposed price and profit, plan of supply and management.
4) Make up a plan of marketing research: assessment of existing and potential demand (evaluation of health indicators), assessment of supply (future and present competitors), and willingness of patients to pay for services.
5) Plan of actions according to the functions of management and the necessary resources. Think about possible ways to attract investors from Public health departments, NGOs, international organizations.
6) Suggest an advertisement project or marketing strategies, which you will use.
7) Suggest the methods of economic evaluation of your medical enterprise. What indicators can be used for analysis?

Recommended literature:

1. Preventive and Social Medicine // K. Park, 23rd ed., 2015, India. P. 868-889.
URL: https://worldofmedicalsaviours.com/park-textbook-of-preventive-and-social-medicine/
2. Health: Systems – Lifestyles – Policies (Volume I). Chapter: The role and organization of health care systems // Editors: Burazeri G., Zaletel-Kragelj L., 2nd ed., Jacobs Verlag, Lage, Germany, 2013. P. 15-25, 341-365.
URL: https://www.philadelphia.edu.jo/academics/aalraoush/uploads/Health-Systems-Lifestyle-Policies.pdf
4. Textbook of Preventive and Social Medicine // Mahajan & Gupta, 4th ed., Jaypee Brothers Medical Publishers, 2013. P. 476-523.
URL:https://drive.google.com/file/d/1MqPqPEXt3fjBVG0QvxSNdeFjJn_uWpQZ/view
5. Introduction to Health Care Management // Buchbinder S.B., Shanks N.H., Kite B.J., 4th ed., Jones and Bartlett Publishers, Inc, 2019. 618 p.
6. Health Care Management // ed. Walshe K., Smith J., 2nd ed., Open University Press, 2011. P. 377-574.

Instructions for writing an individual course project / literature review (a research report) in Public Health, Health Care and Health Economics

To make up a course project in Public Health, Health Care and Health Economics you need to choose one of the essentials problems in Public Heath, which presents a social and public importance for the selected community.

Then follow the algorithm:

1. To make up a literature search on the defined problem. For this you need to revise the sources of literature, including books, periodical publications (articles in journals) and internet web-sites published in the last 5 years.
2. To collect original primary data by research tools using survey methods, by conducting interviews, making observations or taking measurements, from medical records (case histories, out-patient medical records, vaccination passports), or reports issued by medical institutions.
3. To analyze the collected data: to enter the data to electronic database and make analysis using statistical software (Biostat, SPSS, online calculators).
4. Write a final work. It should contain about 45 pages with the following parts: introduction (2 pages), literature review (8-10 pages), methodology part (2-3 pages), results and discussion (25 pages), conclusions (1 page), recommendations (1 page), literature references with 10-15 sources (2 pages).

   The topic can be based on:

   a) Study of Knowledge, Attitudes, Behavior, Practice – about any issue of Public health related to life style, professional choices of medical students, academic environment, ethical, cultural, religious norms and views.

   b) Studying of relationship between some exposures and outcomes like smoking habits / dietary habits/ physical inactivity and rate of acute respiratory infections, level of stress, physical health, obesity, academic performance, quality of life, social activities, satisfaction with life / studies/ relationships with friends or family.

   c) Analysis of efficacy of work of medical institutions. You can study out-patient or in-patient services provided in a particular medical institution or in the certain area (district, region, country) from the point of their efficacy and quality.

   d) Studying of Public health indicators in the certain community by analysis of incidence and prevalence rates, mortality and case-fatality rates, disability rates and demographic indicators. For this choose a specific problem – infant mortality rate, maternal mortality ratio, HIV incidence, prevalence of Diabetes mellitus in the certain population, make profound analysis of available data for the last 5-20 years. Try to explain the detected trends and identify the factors responsible for the changes.

   e) Pharmacological-economic analysis: comparison of medicines, their cost and clinical efficacy.

To collect data you need to develop a special questionnaire or a protocol (a registration or reporting form, where you will enter collected information), or you can take a standard form of a health questionnaire, sometimes you need to translate it into your native language. Your subjects can be students from the certain country or university, population of the certain country or region, you can do online survey using Google forms or conduct a traditional paper or telephone survey.

Examples of topics for course projects

Study on overweight / obesity among medical students and factors contributing to the problem of weight gain in the youth
Social plans of medical students on marriage and family size
Attitudes to modern contraceptive methods
Willingness of medical university graduates to work as a doctor in a rural area
Smoking habits of Brazilian / Indian / Russian, etc.) students
Safe behavior during COVID-19 quarantine / influenza epidemic / measles outbreak
Attitudes and behavior related to sweet drinks / beer drinking / fast food / physical exercises / sports games, etc.
Safe sex practice: study on medical students (young people from a specific country)
Vaccination against hepatitis B / Human papilloma virus: knowledge and practice among medical students
Study of association between Body Mass Index and level of physical activities among elderly people / young people/ adults / physicians / nurses.
Study of association between level of stress and academic performance among junior / senior medical students

Topics for individual work in Public Health, Health Care and Health Economics based on literature review

1.Organization of a statewide emergency medical service system in the country from which you arrived (Western Asia, South Central Asia, South Eastern Asia, Eastern Asia, Eastern Africa, etc.) or one of the developed countries (the USA, Western Europe, Japan).
2. Primary Health Care organization in your native country or one of the developed countries.
3. Hospital and specialized medical care organization in your country or one of the developed countries.
4. Alternatives to inpatient services the world and their effectiveness.
5. The model of Health Care financing in your native country: its advantages and disadvantages.
6. Total quality management in Health Care organizations of your country.
7. Methods of medical service quality control in health care institutions.
8. The ways to measure effectiveness of work of medical institutions.
9. The regional market of medical services: the balance of demand and supply.
10. National Health Care programs in your native country.
11. Population health and Public Health indicators in your native country.
12. Infectious diseases as a medical-social problem in your country (choose the infectious disease with high incidence, describe epidemiology of the disease, its

distribution by age, gender, social status, place, characterize risk and causal factors make a summary on methods of individual and public prophylaxis, describe national disease control programs if they are run).
13. Cancer as a medical-social problem in the world and in your native country.
14. Cardiovascular diseases as a medical-social problem in the world and in your native country.
15. Diabetes as a medical-social problem in the world and in your native country.
16. HIV / AIDS as a medical-social problem in the world and in your native country.
17. Present demographic situation in your native country and prognosis of its future development.
18. Components of Reproductive Health Care and their characteristics in your native country.
19. Mental health indicators of population of your country.
20. Reproductive health indicators of population of your country.
21. Child health indicators in your native country.
22. Maternal health indicators in your native country.
23. Disabled people in your native country: the rates of disability by causes, severity of disability, system of medical, social, vocational rehabilitation of the disabled people.

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ДАННОЕ ИЗДАНИЕ ПРЕДНАЗНАЧЕНО ИСКЛЮЧИТЕЛЬНО ДЛЯ ПУБЛИКАЦИИ НА ЭЛЕКТРОННЫХ НОСИТЕЛЯХ