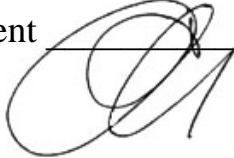


Ministry of Public Health of Ukraine  
“Ukrainian Medical Stomatological Academy”

**“APPROVED”**  
at the meeting of the Department  
of Medical Informatics, Medical Biophysics  
«27» august 2020  
Minutes №. 1 «27» august 2020  
Head of department  O.V.Silkova

**METHODICAL GUIDANCE**

for students’ self-directed work when preparing and during the practical session

Academic Subject	Medical Information Science
Module No 2	Medical knowledge and decision making in medicine and dentistry
Topic	Information resources of health care system.
Year of study	2
Speciality	Foreign Student Training (Medicine)
Number of academic hours	2

**Poltava – 2020**

### 1. Relevance of the topic:

Up to 40% of doctor's working time is wasted on treatment of information about patient, preparation of different documents and reports. Sometimes search of additional information for diagnostics and decision-making can be very important but inaccessible. In these conditions computer use and access to the databases of medical information are necessary for growth of medical practice efficacy.

### 2. The specific aims:

To know

To know definition of medical information systems.

To know technologies of documenting in clinics.

To skill to work with medical information systems.

To understand, to remember and to use the knowledge received;

To form the professional experience by reviewing, training and authorizing it.

### 3. Basic knowledge and skills necessary to study the topic (inter-disciplinary integration).

Previous (providing disciplines)	Obtainable skills
Previous (providing disciplines): Informatics bases	To know basic functions and tasks of information storage and retrieval system. To describe them assignment.
The subsequent disciplines: Social medicine	To know how to use for necessary information search.

### 4. The tasks for students' individual work

#### 4.1. The list of basic term, parameters, characteristics, which student should master while preparin for the class.

Term	Definition
Information storage and retrieval system	Hardware and software complex for gathering, storage, classification, search on the different attributes, and presentation of data in certain area of knowledge or practice.
Medical information system	It is information storage and retrieval systems in the field of medicine and public health care.

#### 4.2 Theoretical questions for the class (to the topic):

1. Give a definition of new information technologies.
2. Describe a technological scheme of a treatment-and-diagnostic process.
3. Give a definition of medical information systems and them classification.
4. Describe methods of information storage and retrieval system development.
5. Describe network communication role in medical information systems development.
6. Describe MIS levels (Computerized Medical Record System; Electronic Medical Records; Electronic Patient Record ; Electronic Health Record).
7. List features HMIS and IEHMS.

#### 4.3 Practical tasks pertaining to the topic and to be completed during the class:

##### Test

1. What is a medical information system?

- a) a set of technical equipment, software and service personnel
- b) subsystem database of the medical institution

- c) software environment
  - d) various state government institutions
  - e) a set of systematic medical data for processing using a computer with a purpose
2. How can we characterize MIS?
- a) large volume of database;
  - b) small volume of database;
  - c) a large volume of knowledge base;
  - d) a minor volume of knowledge base;
  - e) none of the above.
3. Information Systems are NOT used in which of the following organisations?
- a) Home finance;
  - b) Educational;
  - c) Governmental;
  - d) Health care;
  - e) Scientific.
4. Which of the following is NOT a common type or category of INFORMATION SYSTEMS used in organisations
- a) transaction processing systems;
  - b) decision support systems;
  - c) enterprise resource planning applications;
  - d) web-browser applications;
  - e) digital dashboard applications.
5. Which of the following is NOT a common type or category of INFORMATION SYSTEMS used in organisations
- a) transaction processing systems;
  - b) decision support systems;
  - c) enterprise resource planning applications;
  - d) web-browser applications;
  - e) digital dashboard applications.

### **Content of the topic:**

#### **INFORMATION RESOURCES OF HEALTH CARE SYSTEM.**

A **systematic review** is a literature review focused on a research question that tries to identify, appraise, select and synthesize all high quality research evidence relevant to that question.

A systematic review aims to provide an exhaustive summary of literature relevant to a research question. The first step of a systematic review is a thorough search of the literature for relevant papers. The *Methodology* section of the review will list the databases and citation indexes searched, such as **Web of Science** and **PubMed**, as well as any individual journals. Next, the titles and the abstracts of the identified articles are checked against pre-determined criteria for eligibility and relevance. Each paper may be assigned an objective assessment of methodological quality using the Jadad scale or similar rating system.

The *systematic review* of published research studies is a major method used for evaluating particular treatments. The *Cochrane Collaboration* is one of the best-known, respected examples of systematic reviews. Like other collections of systematic reviews, it requires authors to provide a detailed and repeatable plan of their literature search and evaluations of the evidence. Once all the best evidence is assessed, treatment is categorized as "likely to be beneficial", "likely to be harmful", or "evidence did not support either benefit or harm".

The Cochrane Collaboration defines a systematic review as a review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from studies that are included in the review.

Systematic reviews synthesize the results of multiple primary investigations by using strategies that limit bias and random error. These include a comprehensive search of all potentially relevant articles and the use of explicit, reproducible criteria in the selection of articles from review.

#### **The Cochrane Collaboration**

The Cochrane Collaboration is an international and independent non-profit organisation established in 1993 aimed at producing up-to-date, accurate information about the effects of healthcare available worldwide. The Cochrane Collaboration produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other intervention studies.

The Cochrane Collaborations handbook for systematic reviews of interventions is its main working document. The handbook describes in detail the process of creating Cochrane systematic reviews. It is available online at:

<http://www.cochrane.org/resources/handbook/>

The main output of the Collaboration is the Cochrane Database of Systematic Reviews, which is contained as part of the Cochrane Library.

### **The Cochrane Library**

The Cochrane Library is a collection of evidence based healthcare databases.

### **Grey Literature**

Grey literature has been defined as: that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers.

### **Types of grey literature**

Grey literature comprises a wide range of material including, government publications, reports, statistical publications, newsletters, fact sheets, working papers, technical reports, conference proceedings, policy documents and protocols and bibliographies.

### **Producers of grey literature**

A wide range of organizations produce a significant amount of grey literature related to public health, health policy and epidemiology. These include:

- Government health agencies
- Non-profit organisations
- Universities
- Research centres
- International agencies such as the World Health Organization (WHO) and UNAIDS.
- Health institutes
- Professional organisations
- Special interest groups.

### **Searching Tools**

#### **• Medline**

• Both PubMed and Ovid are often referred to as Medline. They contain the same information.

#### **• PubMed Clinical Queries**

#### **• Ovid**

• Cochrane's Database (Systematic Reviews; Database of Reviews of Systematic Reviews; Cochrane Controlled Trials Register)

• Best Evidence (Electronic version of ACP Journal Club; Most information contained in commentary)

### **Clinical Queries in PubMed**

#### **Applies research methodology filters**

#### **• Categories:**

#### **• Therapy**

• Double-blind randomized controlled trials

#### **• Diagnosis**

• Compares new test to the gold standard; controlled trials

#### **• Etiology**

• Longitudinal Studies

#### **• Prognosis**

• Cohort studies or survival analyses

### **Cochrane Database of Systematic Reviews**

• The Cochrane Database of Systematic Reviews (COCH) includes the full text of the

regularly updated systematic reviews prepared by The Cochrane Collaboration.

- The reviews are presented in two types:
  - Complete reviews - Regularly updated Cochrane Reviews, prepared and maintained by Collaborative Review Groups
  - Protocols - Protocols for reviews currently being prepared. Protocols are the background, objectives and methods of reviews in preparation.

#### **DARE**

- The Database of Abstracts of Reviews of Effectiveness (DARE) includes the Cochrane Database of Systematic Reviews and ACP Journal Club
  - DARE is a Full Text database containing critical assessments of systematic reviews from a variety of medical journals. DARE consists of structured abstracts of systematic reviews from all over the world. DARE records cover topics such as diagnosis, prevention, rehabilitation, screening, and treatment.

#### **ACP Journal Club**

The ACP Journal Club Collection consists of two journals ACP Journal Club, a publication of the American College of Physicians, and Evidence-Based Medicine, a joint publication with the British Medical Journal Group.

The editors of ACP Journal Club screen the top clinical journals on a regular basis and identify studies that are both methodologically sound and clinically relevant. They write an enhanced abstract of the chosen articles and provide a commentary on the value of the article for clinical practice. Using this source, clinicians can quickly understand and apply to their practice important changes in medical knowledge, without having to read and synthesize for themselves thousands of journal articles.

#### **CCTR**

CCTR is a bibliographic database of definitive controlled trials. These controlled trials have been identified by the distinguished contributors to the Cochrane Collaboration.

They search the world's health care journals systematically, have combined results to create an unbiased source of data for systematic reviews.

CCTR contains over 300,000 bibliographic references to controlled trials in health care. Contributors to the Cochrane Collaboration follow quality control standards to ensure that only reports of definite randomized controlled trials or controlled clinical trials are included.

Although many reports of trials are included in MEDLINE, others are not easily identified as randomized controlled trials; and as such, researchers may overlook them in the search for relevant studies for systematic reviews.

### **Tasks for self-check:**

#### **Task 1:**

1. EXTENSIVE USE OF STANDARDS FOR EFFECTIVE EVIDENCE-BASED MEDICINE AND TRAINING OF MEDICAL PERSONNEL:

- a) legal aspect;
- b) the economic aspect;
- c) educational aspect;
- d) medical and ethical aspects;
- e) other.

2. WHAT ARE THE MAIN SOURCE OF PRIMARY SCIENTIFIC INFORMATION THAT REFLECTS THE CURRENT TRENDS IN SCIENCE AND PRACTICE?

- a) monographs;
- b) magazines;
- c) systematic reviews;
- d) online news;
- e) news.

3. WHAT IS THE DATA ENCRYPTION?

- a) It is using either a single key (or a pair of keys) to scramble and unscramble the text (or other medical data types).
  - b) It is the process of verifying the identity of a potential user of a system.
  - c) It is process of determining whether a user is authorized to have access to a system or application.
  - d) All listed answers are right.
  - e) It is the process of logging into the Windows Operating System like Windows XP.
4. WHAT IS THE USERS AUTHENTICATION?
- a) It is using either a single key (or a pair of keys) to scramble and unscramble the text (or other medical data types).
  - b) It is the process of verifying the identity of a potential user of a system.
  - c) It is process of determining whether a user is authorized to have access to a system or application.
  - d) All listed answers are right.
  - e) It is the process of logging into the Windows Operating System like Windows XP.
5. WHICH OF THE FOLLOWING IS STRONG PASSWORDS?
- a) Administrator
  - b) c0mputer
  - c) %4Btv
  - d) \$jelF2bb
  - e) My dog's name

### **References:**

#### **Basic.**

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3. Mark A. Musen B. Handbook of Medical Informatics // Электронний ресурс <ftp://46.101.84.92/pdf12/handbook-of-medical-informatics.pdf>
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6. Marzeniuk, V.P. Biophysics and medical informatics : Manual for Students of the Higher Medical Schools of the III-IV Degree of Accreditation / V.P. Marzeniuk, V.D. Didukh, D.V. Vakulenko at al. – Ternopil : Ukrmedknyha, 2004. Vol. 1: – 479 с. :

#### **Additional.**

1. [www.imia.org](http://www.imia.org) (Міжнародна Асоціація Медичної Інформатики)
2. [www.mihandbook.stanford.edu](http://www.mihandbook.stanford.edu) (Медична інформатика, Стенфордський університет)
3. [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov) (Національна бібліотека медицини США)
4. [www.cochrane.ru](http://www.cochrane.ru) (Розділ Кохранівського співтовариства)

The methodical guidance has been completed by **S.Y. Olenets**