Ministry of Public Health of Ukraine
"Ukrainian Medical Stomatological Academy"

"APPROVED"
at the meeting of the Department
of Medical Informatics, Medical Biophysics
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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	Evidence-based medicine. Ethical and legal principles of information management in the health care field
Year of study	2
Speciality	Foreign Student Training (Medcine/Stomatology)
Number of academic hours	2

Poltava – 2020

1. **Relevance of the topic**:

The main purpose of data collection - to provide medical information. For example, body temperature, may provide information on fever, laboratory studies provide information on the functioning of organs, etc. Together with knowledge of the data - the basis for further action.

The choice of the best ways to store and process large amounts of medical information has long been one of the urgent problems of the health system in Ukraine. The structure of any hospital there are centers where you get the information you want to store and handle.

The blending of medicine and healthcare with e-commerce and the Internet raises many questions involving what sort of ethical conduct should be expected by practitioners and developers of the medical Internet. Ultimately, all those involved in the creation, maintenance, and marketing of medical and healthcare Web sites should be required to adhere to a strict code of ethical conduct, one that has been fairly determined by an impartial international organization with reasonable power to regulate the code. This code could also serve as a desirable, recognizable label-of-distinction for ethical Web sites within the medical and healthcare Internet community. One challenge for those involved with the medical and healthcare Internet will be to determine what constitutes "Medical Internet Ethics" or "Healthcare Internet Ethics," since the definition of medical ethics can vary from country to country. Therefore, the emerging field of Medical/ Healthcare Internet Ethics will require careful thought and insights from an international collection of ethicists in many contributing areas.

2. **The specific aims**:

Data types and their characteristics;
Basic principles of queries
Steps of evidence-based medicine,
Principle of PICO,
Skills in Konkranivskiy library.
To have general knowledge of the topic studied;
To understand, to remember and to use the knowledge received;
To form the professional experience by reviewing, training and authorizing it;
To be able to carry out laboratory and experimental work.

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

Previous (providing disciplines)	**Obtainable skills**
History of medicine	To know ethical principles of medicine
The subsequent disciplines: Social medicine	To know ethical problems of medical information use in Internet, legal principles of information management.
Evidence-Based medicine	A comprehensive individual clinical expertise with the best perspective and objective clinical evidence of systematic research.

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
Ethics	The discipline dealing with what is good and bad, and with moral duty and obligation.
Law	A binding custom or practice of a community: a rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority.
Ethical principles	The rules and standards governing behavior of a person. They are based on moral ideas and conceptions.
Steps of evidence-	Step 1. Formulating the right questions.

based medicine	Step 2: Find the best proof. Step 3. Rapid critical evaluation of controlled trials. Step 4. Use of evidence. Step 5. Evaluating the effectiveness and deystvennost processes.

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

1. How the medicine, which is founded on proofs, is named?
2. What does the evidence-based medicine provide?
3. What is individual clinical practical experience?
4. What is independent clinical evidences?
5. Placebo in medicine.
6. PICO principles.
7. Blind and double-blind experiments.
8. How the method of random division of patients on experimental and control groups is named?
9. What is purpose of randomization?
10. What you know methods of evidential research?
11. What is the meta-analysis?
12. What you know problems of meta-analysis?
13. Cochrane Database of Systematic Reviews.
14. What is Cochrane Collaboration?
15. What main tendencies of development Cochrane Collaboration?
16. List main values in medical ethics.
17. List main ethical principles of medicine.
18. Describe ethical problems of information exchange in medicine.
19. Describe ethical problems of medical information use in Internet.
20. Describe medical Internet ethics questions.
21. Describe legal principles of information management on state (national) level.

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

Test

1. WHAT IS EVIDENCE-BASED MEDICINE?

a) for decisions based on facts

b) Evidence that provide search, comparison, generalization and distribution

c) the practical exercises

d) the analytical algorithms

e) to logical formulas

2. WHAT ARE THE TRADITIONAL DESCRIPTIONS WHICH OFTEN CONTAIN ZSUNENI EVALUATION OF THE FINAL RESULTS BY THE IMPOSSIBILITY OF MAKING A SCIENTIFIC APPROACH?

a) news

b) Reports

c) systematic reviews

d) monograph

e) Magazines

3. HOW IS THE INTERNATIONAL ORGANIZATION WHOSE PURPOSE - SEARCHING, SUMMARIZING THE RESULTS OF ACCURATE INFORMATION ABOUT MEDICAL INTERVENTIONS?

a) Cochrane collaboration

b) UN

c) World Health Organization

d) UNESCO

e) UNICEF

4. HOW IS THE STUDY WHERE NEITHER THE DOCTOR NOR THE PATIENT DOES NOT KNOW WHICH DRUG A PATIENT RECEIVES?

a) randomization
b) traditional research
c) a double-blind
d) single blind
e) open-label study

5. IN WHAT YEAR WAS THE FIRST PUBLISHED SYSTEMATIC REVIEW WAS PUBLISHED A. KOKRANOM?

a) in 1979.
b) in 1987
c) in 2001
d) in 2007.
e) in 1959.

Content of the topic:

Evidence-based medicine (EBM) is a way of combining the best available scientific evidence, the practitioner's clinical judgment, and the patient's values to make medical decisions. EBM is a collation, modernization, and codification of century-old principles of science, medicine, and probability.

To practice EBM, a core set of concepts and techniques must be mastered. At the most basic level, this includes an ability to formulate questions based on patients' problems, search the literature for answers, sort the wheat from the chaff with regard to study validity, and then apply the information to our patients (Table 1).

In its more developed form, EBM requires a set of skills centered on clinical epidemiology. These skills are not the same as those required of a researcher, although the overlap in content is great. Rather, they are the tools for finding, interpreting, and applying the medical literature in a patient-centered manner.

EBM is a new name for an old practice. It is a set of tools and methods for finding and applying the best evidence available to patient care. The volume of journal articles about or embracing EBM has been growing exponentially for a decade.

EBM provides a framework for understanding the degree of uncertainty we face in using these myriad sources of information.

The practice of evidence-based medicine means integrating individual expertise with the best available external clinical evidence from systematic research. Best available external clinical evidence means clinically relevant research, often from the basic sciences of medicine, but especially from patient centred clinical research into the accuracy and precision of diagnostic tests, the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative, and preventative regimens.

One of the driving forces behind the development of evidence based medicine has been the recognition of the gap between research evidence and clinical practice.

Research literature is constantly changing and the volume of health information has increased rapidly. The growth of health care information has been particularly rapid in diagnostic and therapeutic technologies.

Evidence-based medicine should be patient centered. If a patient cannot afford an expensive drug, it is foolish to prescribe it, even if it is the ‘‘best’’ choice based on the scientific evidence.

Evidence-based medicine (EBM) or **evidence-based practice** (EBP) aims to apply the best available evidence gained from the scientific method to clinical decision making. It seeks to assess the strength of evidence of the risks and benefits of treatments (including lack of treatment) and diagnostic tests. Evidence quality can range from metaanalyses and systematic reviews of double-blind, placebo-controlled clinical trials at the top end, down to conventional wisdom at the bottom.

EBM/EBP recognizes that many aspects of health care depend on individual factors such as quality- and value-of-life judgments, which are only partially subject to scientific methods. EBP, however, seeks to clarify those parts of medical practice that are in principle subject to scientific methods and to apply these methods to ensure the best *prediction* of outcomes in medical treatment, even as debate continues about which outcomes are desirable.

Because this approach is used in allied related fields, including dentistry, nursing, and psychology, *evidenced-based practice* is a more encompassing term.

The hierarchy of evidence

Research evidence in healthcare can be classified according to level of quality. This is known as the hierarchy of evidence. This is illustrated in figure 1.

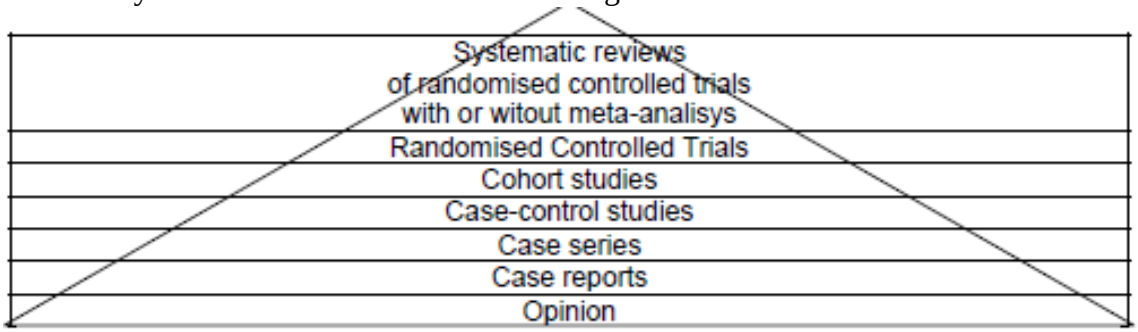

Figure 1: Hierachy of evidence.

Some Public Domain Resources for Evidence-based Medicine.

PubMed (http://www.ncbi.nih.gov/entrez/query.fcgi) for MEDLINE searching.

The Centre for Health Evidence (http://www.cche.net/che/home.asp)

Users' Guides online.

The Centre for Evidence-Based Medicine in Toronto (http://www.cebm.utoronto.ca/)

Pilot resources, and many teaching examples.

Best Bets (http://www.bestbets.org/), which is focused on emergency medicine.

The Centre for Evidence-Based Medicine (http://www.minervation.com/cebm/)

The First Step of EBM

Convert a clinical situation into a searchable, (and hopefully answerable) question using PICO:

«Patient or Problem»: "Patient" refers to the person presenting with the problem, or more simply, to the problem itself. Both concepts are important in searching.

"Intervention" refers to the action taken in response to the problem. This is often a drug or surgical procedure, but it can take many forms

"Comparison" refers to the benchmark against which the intervention is measured. Often it refers to another treatment, no treatment, or a placebo.

"Outcome" refers to the anticipated result of the intervention.

Clinical Scenario

Wedge of Evidence You are seeing a child with acute diarrhea and a lower respiratory infection. You know that zinc supplementation will improve the diarrhea, but will it help the respiratory infection as well? Or is there something else that you can add that might work with the zinc?

P: Child with diarrhea and respiratory infection

I: Zinc supplementation

C: Zinc supplementation plus something else

O: Improvement in diarrhea and respiratory infection

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 categoried as "likely to be beneficial", "likely to be harmful", or "evidence did not support either benefit or harm".

Generally, there are two important areas of EBM. The first is to treat individual patients with acute or chronic pathologies by treatments supported in the most scientifically valid medical literature. Thus, medical practitioners would select treatment options for specific cases based on the best research for each patient they treat. The second area is the systematic review of medical literature to evaluate the best studies on specific topics. This process can be very human-centered, as in a journal club, or highly technical, using computer programs and information techniques

such as data mining.

Increased use of information technology turns large volumes of information into practical guides.

Evidence-based medicine categorizes different types of clinical evidence and rates or grades them according to the strength of their freedom from the various biases that beset medical research. For example, the strongest evidence for therapeutic interventions is provided by systematic review of randomized, triple-blind, placebo-controlled trials with allocation concealment and complete follow-up involving a homogeneous patient population and medical condition. In contrast, patient testimonials, case reports, and even expert opinion have little value as proof because of the placebo effect, the biases inherent in observation and reporting of cases, difficulties in ascertaining who is an expert, and more.

A **blind** or **blinded experiment** is a scientific experiment where some of the persons involved are prevented from knowing certain information that might lead to conscious or unconscious bias on their part, invalidating the results.

Double-blind describes an especially stringent way of conducting an experiment, usually on human subjects, in an attempt to eliminate subjective bias on the part of both experimental subjects and the experimenters. In most cases, double-blind experiments are held to achieve a higher standard of scientific rigor.

In a double-blind experiment, neither the individuals nor the researchers know who belongs to the control group and the experimental group. Only after all the data have been recorded (and in some cases, analysed) do the researchers learn which individuals are which. Performing an experiment in double-blind fashion is a way to lessen the influence of the prejudices and unintentional physical cues on the results (the placebo effect, observer bias, and experimenter's bias). Random assignment of the subject to the experimental or control group is a critical part of double-blind research design. The key that identifies the subjects and which group they belonged to is kept by a third party and not given to the researchers until the study is over.

A **placebo** is a sham or simulated medical intervention. A placebo has been defined as "a substance or procedure… that is objectively without specific activity for the condition being treated".

A **Placebo-controlled study** is a way of testing a medical therapy in which, in addition to a group of subjects that receives the treatment to be evaluated, a separate control group receives a sham "placebo" treatment which is specifically designed to have no real effect.

Meta-analysis

In statistics, a **meta-analysis** combines the results of several studies that address a set of related research hypotheses. In its simplest form, this is normally by identification of a common measure of effect size, for which a weighted average might be the output of a meta-analyses. Here the weighting might be related to sample sizes within the individual studies. More generally there are other differences between the studies that need to be allowed for, but the general aim of a meta-analysis is to more powerfully estimate the true "effect size" as opposed to a smaller "effect size" derived in a single study under a given single set of assumptions and conditions.

Meta-analyses are often, but not always, important components of a *systematic review* procedure. Here it is convenient to follow the terminology used by the Cochrane Collaboration, and use "meta-analysis" to refer to statistical methods of combining evidence, leaving other aspects of 'research synthesis' or 'evidence synthesis', such as combining information from qualitative studies, for the more general context of systematic reviews.

Steps in a meta-analysis

1. Formulation of the problem.
2. Search of literature.
3. Selection of studies.
4. Decide which dependent variables or summary measures are allowed.
5. Model selection.

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 categoried 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 refered to as Medline. They contain the same information.

• **PubMed Clinical Queries**

• **Ovid**

• Cochrane's Database (Systematic Reviews; Database of Reviews of Systematic Reviews; Cochcrane 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.

Ethics *has been defined by Webster's as "the discipline dealing with what is good and bad, and with moral duty and obligation." By comparison, laws instruct people directly on how to behave (or not to behave) under various specific circumstances. Furthermore, there are prescribed remedies or punishments for individuals who do not comply with the law.*

Law *is defined by Webster's as "a binding custom or practice of a community: a rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority."*

Ethical principles are the rules and standards governing behaviour of a person. They are based on moral ideas and conceptions. Shortly, ethics is based on ideas what is good or bad, right or wrong.

Professional ethics includes application of such ideas in the professional activity. *Medical ethics* is one of its most developed branches.

Medical Ethics

Medicine's code of ethics is considered to be far more stringent than the law. Most physicians are governed by their own internal code of ethics and more-formalized codes have been developed by professional organizations to advocate that their members behave ethically.

Values in medical ethics

- Autonomy – The patient has the right to refuse or to choose their treatment.
- Beneficens – a practitioner should act in the best interest of the patient.
- Non-maleficens – first, do not harm.
- Justice – concerns the distribution of scarce health resourses, and the decision of who gets what treatment (fairness and equality).
- Dignity – the patient (and the person treating the patient) have the right to dignity.
- Truthfulness and honesty – the concept of informed consent.

Values do not describe, what to do in the certain situation, but provide a framework for decision-making in disputed situations.

Main ethical principles of medicine.

- Do not harm.
- Make things better.
- Respects to others.
- Confidentiality.
- Tell the truth.
- Keep your promises.

Ethics can be viewed as a prerequisite for the success of medical practice. Knowledge and capabilities of new technology or an area of study often develop faster than the guidelines and principles needed for practitioners to practice ethically in the new arena. One area of rapid technological and economic expansion is that of the Internet, in particular how quickly the Internet is impacting and changing the practice of medicine in the 21st century.

Background: The Integration of the Internet into Daily Life

For many of us the Internet has been integrated into our daily lives, with e-mail use becoming as commonplace as talking on the telephone. This modern method of communication has been the fastest-growing medium in the world. Although it is difficult to determine the exact number of people online, a reasonable estimate from Nua Internet Surveys in November 2000 already was 407.1 million people worldwide.

Background: The Integration of the Internet into Medicine

The Internet has the potential to substantially alter the way medicine is practiced, from simple e-mail communication to routine billing, distant consultations, and routine patient care. There are more than 20,000 Web sites online devoted to medicine and healthcare originating from diverse sources-medical, health, personal, and commercial. Online health consumers (also known as patients) can access: Web sites related to health, on-line support groups, chatrooms and Web sites devoted to a specific disease, pharmaceutical sites, alternative-health sites, information on medical products, and online practitioners or consultants. By recent estimates, 52 million American adults, or 55% of those with Internet access, have used the Web to obtain health or medical information.

The number of adults using the Internet for health information, shopping for health products, and communicating with payers and their providers is anticipated to reach 88.5 million by 2005 and is projected to grow at approximately twice the rate of the overall online population.

Medicine and Healthcare on the Internet

Medical websites, more than any other type of site on the Internet, should ensure visitors' personal privacy and prevent personal medical information, including patterns of use and interests, from being sold, purchased, or inadvertently entering the hands of marketers, employers, and insurers.

Principles Governing AMA Web Sites

Business and computer professionals have typically not been held to the same ethical code of behavior as medical and healthcare professionals. With the merger of medicine and e-commerce, business, computer, medical and healthcare professionals are working side by side in developing online Web sites. Those who develop, maintain, and sell healthcare computing systems and components, including Web sites, have an ethical obligation to make patient care a primary concern.

Studies have shown that most adult Internet users are unaware their movements are being tracked and are also not aware of the personal information gathered about them when visiting a Web site. In reality, e-mail is forever; messages are backed up and recoverable. Therefore, medical and healthcare Web sites should be following strict security measures to ensure that their site-users' personal medical information remains private and does not involuntarily enter the hands of marketers, employers, and insurers.

Communication technology is evolving. New technology - such as mobile phones, hand-held computers, personal device assistants (PDAs), and even wearable computer devices - is being developed. The ethical guidelines being developed for the Internet will need to have the flexibility to adapt and include future forms of telecommunication as they appear.

Merging Fields of Study: Medicine, Ethics, Science, Computers, E-commerce...

Medical Internet Ethics includes several existing areas of study. How it is defined depends on who is viewing or experiencing the field.

Insights from professionals in the following diverse groups from countries around the world, should be included when defining this new interdisciplinary domain:

1. Healthcare delivery: physicians, nurses, pharmacists, healthcare professionals, and other healthcare personnel.
2. Applied computing: systems developers, database managers, medical software developers, and Web administrators.
3. Science and research.
4. Government agencies: public-health and regulatory agencies.
5. Healthcare services and e-commerce: providers of healthcare transactions conducted over the Internet.
6. End users: healthcare consumers and patients.
7. Healthcare organizations: insurance companies, management organizations, and societies.
8. Administration and healthcare management.
9. Medical ethics.
10. Law.

Medical Internet Ethics is the field existing at the intersection of medicine, ethics, and computers, but is conducted, occurs, or practiced in the new arena of the Internet. Therefore, a definition can be stated as:

Medical Internet Ethics is an emerging interdisciplinary field that considers the implications of medical knowledge utilized via the Internet, and attempts to determine the ethical guidelines under which ethical participants will practice online medicine or therapy, conduct online research, engage in medical e-commerce, and contribute to medical websites.

Healthcare Internet Ethics would involve the ethical principles that apply to nurses and other healthcare providers, however, in the context of this discussion, we are using "healthcare" interchangeably with "medicine" or "medical" when referring to Internet ethics.

Ensuring Internet Users Privacy and Security

In this age of expanding access to information, a critical ethical responsibility is recognizing the right to privacy. A considerable challenge arises from trying to balance the desire to make information freely available to users of the Internet, while at the same time protecting people's privacy and confidentiality.

A Field in Evolution

The rapid technologic development of the Internet has opened communication and commerce to the wired world, to people and professionals in different countries with different customs, beliefs, and definitions of ethics. The Internet is also changing how medicine will be practiced in the 21st century. The Internet raises many new ethical challenges for the medical community, especially when trying to consolidate different views from different countries on medical ethical practices.

Cybercrimes and the Medical Internet

The Internet has provided a new arena for the criminal element as well. In the US the Criminal Division's Computer Crime and Intellectual Property Section (CCIPS) was established as a separate section of the Department of Justice.

With the growth of the Internet and the increase in cybercrime, it is easy to see why protection of privacy is an issue of great concern particularly among Internet users seeking health information.

As regards the information flows in health care field, information storage and exchange, information processing are very important and typical on the modern stage of health care field. Hence, problems of information leakage, illegal (unauthorized) access and subsequent harm for a patient (social, psychological and medical) are very topical.

Legal principles.

Legislation To Promote Efficient Information Systems and Protection of Privacy

Information can be transmitted between state and medical organisations, however, it may be subject to the different legal requirements stipulated by each state.

The lack of a uniform policy on interstate dissemination of health care information imposes hardships on almost everyone. Consequently, many persuasive reasons exist to adopt a uniform international policy on health care information that transcends state borders.

The following proposals for a federal privacy statute are based on consultations with the Centers for Disease Control and Prevention and recommendations from the National Research Council (USA):

1) National safeguards that protect the privacy of health care information should be based on fair information practices. Federal legislation should establish uniform and comprehensive privacy protection of health care information. Privacy protection should cover all health care information regardless of its form (paper, microfilm, or electronic), location (in storage, transit, or archives), or user or holder (government, provider, or private organization). Effective penalties for breach of privacy should be established.

A national privacy framework should be founded on the following code of fair information practices: Individuals would have the right to control the use of personal data, secret data systems would not be permitted to exist, individuals would have the right to review and correct personal data, and data would be collected and used only for important health care purposes.

2) Patients should be able to consent to the collection and use of personal information. Patients are entitled to know and consent to the collection and use of identifiable information, the length of time that information can be stored and the circumstances under which it can be expunged, and the degree to which third parties (for example, regulators, researchers, and government officials) can obtain access. The acquisition, storage, use, and transmission of data should be done with the consent of patients.

3) Health care providers should adhere to the principle of least-intrusive disclosure. Disclosure of information by health care providers must be restricted to data that are least likely to identify the patient and reveal sensitive personal facts and to the fewest number of persons necessary to achieve the stated purpose.

4) An industry-wide security infrastructure should be established. The National Research Council of USA made the following recommendations to ensure enhanced security: Develop

technical and organizational policies, practices, and procedures (for example, authentication of users, access controls, audit trails, disaster recovery, protection of remote access points, and encryption of all patient-identifiable data before transmission on public networks); promote the sharing of information on security throughout the industry; and improve security technologies for health care applications.

5) A data protection and security board should be established. A data protection and security board would help to protect each citizen's right to privacy within a secure framework.

Health informatics law

It applies values and principles of medical ethics to information technology in the health care field.

Conclusion.

Perhaps what the public desires is not absolute privacy but reasonable assurances that when personal information is collected, health care providers, managed care organizations, and insurers will treat the information with respect, store it in an orderly and secure manner, and disclose it only for important public health purposes and in accordance with publicly accountable principles of fairness.

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