

LEGAL MEDICINE AND TOXICOLOGY

Total credits: 10	Theory credits: 5	Practical credits: 5
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GENERAL OBJECTIVES

LEGAL MEDICINE

In general terms, the course in Legal Medicine aims to give medical students the knowledge and skills required to practice medicine in accordance with existing regulations covering all levels of professional activity. Logically, the most important of these is the care level, in which professionals must observe regulations so as to avoid accusations of malpractice, although it is important to avoid the type of conservative approach that may adversely affect the patient and the workings of the healthcare system as a whole.

TOXICOLOGY

Toxicology is the study of the harmful effects of aggressive chemicals; principally the pathology, preventive measures, the risk posed by toxins in the environment and description of the most significant groups of toxic substances that affect humans. The subject takes an essentially preventive approach and also focuses on the specialty of occupational medicine.

SPECIFIC OBJECTIVES

LEGAL MEDICINE

- Satisfactory knowledge of the regulations governing the requirements for medical practice and the different specialties, professional confidentiality and patient rights to enable doctors to work accordingly.
- Detailed knowledge to ensure the appropriate diagnosis of death in the different circumstances established by law.
- The detailed knowledge required to certify death according to the different situations established in the regulatory framework, and particular knowledge of the circumstances in which death cannot be certified, especially in cases of suspicious or violent death.
- Satisfactory knowledge of the basic documentation required in medical practice.
- Sufficient knowledge to make adequate assessment of lesions.
- Knowledge of doctor involvement in the evaluation of the different types of disabilities and the ability to establish cases of temporary disability.
- Satisfactory knowledge of the states of mental alteration that confer imputability, modify its degree or determine the potential risk.
- Ability to adapt knowledge to rapid social changes in terms of common practices, regulations, laws and medical advances and the ability to research the changes produced.
- Satisfactory knowledge of the crimes that can be committed in medical practice, and awareness that ignorance is no defence in law.
- Basic knowledge of forensic identification and genetics.

TOXICOLOGY

Sufficient knowledge to act appropriately in the following situations:

- Emergency diagnostic orientation in cases of poisoning.
- Rapid evaluation of the degree of seriousness of poisoning and derived effects.
- General understanding of the principal regulations in emergency treatment of poisoning.
- Basic knowledge of the principal aspects of the mechanism of action of toxins.
- Satisfactory knowledge of analytical assessment in a case of poisoning: determination of parameters, collection and processing of samples, interpretation of results.

- Ability to adapt knowledge to the rapid changes in the social context of poisoning.
- Satisfactory knowledge of the principal aspects of risk in pathologies caused by habit-forming substances.
- Satisfactory knowledge of the principal aspects in pathologies caused by medicinal drugs. Principal points of risk. Evaluation of iatrogenic error and physician responsibility.
- Satisfactory knowledge of the risk posed by domestic products and emergency treatment.
- Satisfactory knowledge of the health risk posed by pollutants in the environment.
- Basic knowledge of the risk of aggressive chemicals in the working environment and in the specialty of occupational medicine.
- Acquisition of the sufficient basic knowledge to enable rapid understanding of the toxic risk of new aggressive chemicals considered as habit-forming substances, medicinal drugs and industrial products.
- Ability to carry out research on the changes in the risk and pathology of toxic substances.

PROGRAMME

LEGAL MEDICINE

Thanatology

1. Legislation in thanatology. Diagnosis of death. Certification of death.
2. Early post-mortem changes.
3. Negative vital signs. Brain death. Transplant legislation.
4. Delayed post-mortem phenomena. Establishing time of death.
5. Post-mortem preservation procedures.
6. Violent death.
7. Sudden death.
8. Medico-legal autopsy.

Forensic traumatology

1. Mechanical asphyxia.
2. Firearms and sharp weapons.
3. Evaluation of physical damage caused by traffic accidents.
4. Differential diagnosis between pre- and post-mortem wounds.
5. Injuries caused by contusion, falls and sudden movements.
6. Injuries caused by other physical and chemical agents. Mass disasters.
7. Child abuse.
8. Medico-legal study of homicide and suicide.

Forensic sexology

1. Identification and diagnosis of sex.
2. Violations of sexual freedom.
3. Abortion.

Forensic sciences

1. The forensic laboratory.
2. Identification of live patients and recent death.
3. Identification of bone remains.
4. Genetic identity. Forensic genetics. Determination of paternity.

Medical law

1. Requirements for professional practice.
2. Medical confidentiality.
3. Patient rights.
4. Professional responsibilities. Patrimonial, penal, civil and institutional levels.

Forensic psychopathology

1. Imputability, ability and risk.
2. Medico-legal psychiatric reports. Incapacitation.
3. General regulations for commitment of psychiatric patients.
4. Simulation of mental illness.

Occupational medicine

1. Organization of the specialty.
2. Professional illnesses, occupational accidents and illnesses.
3. Occupational disability.
4. Appropriate institutions for the assessment of occupational pathology.

TOXICOLOGY

Introduction and general clinical aspects

1. Introduction to toxicology. Concept. Analysis of course content. The main areas of toxicology. Current approach.
2. Epidemiology of poisoning. Frequency. Etiology. Different degrees of poisoning.
3. Introduction to clinical toxicology. The first contact with a poisoned patient. The main syndromes of the entry pathways.
4. The main neurological syndromes of toxic origin.
5. Other principal syndromes of toxic origin.
6. Sudden death in toxicology. Oncogenetic and teratogenetic risk posed by aggressive chemicals.

General physiopathology of poisoning

1. General aspects: toxin entry pathways. Absorption. Distribution. Metabolization and elimination.
2. Toxicokinetics. Principal metabolization pathways of aggressive chemicals.
3. Cellular and molecular mechanisms of action of toxins.
4. Chemical carcinogenesis and mutagenesis.
5. General criteria for the quantitative assessment of toxicity.
6. General regulations for toxicological analysis. Evaluation of data in emergency toxicological analysis.

General therapeutics

1. Basic principles for the treatment of poisoning.
2. General support measures. Measures to decrease absorption of toxins.
3. Measures to increase the excretion of toxins.
4. Specific treatment of poisoned patients. Antidotes.

Social toxicology

1. Classical types of poisoning. Pathology and risk posed by carbon monoxide. Current situation.
2. Principal types of intentional poisoning: arsenic, phosphorus, cyanide, others. Current situation.
3. Pathology and risk posed by alcohol. Physiopathology. Clinical aspects: acute and chronic pathology. Social problems. Risk and evaluation of the effects of alcohol on driving. Other alcohol-related risks.
4. Pathology and risk posed by tobacco. Principal components. Current situation.
5. Classic drugs. Pathology and risk posed by opiates. Current situation.
6. Pathology and risk posed by cannabis. Current situation.
7. Pathology and risk posed by cocaine. Current situation.
8. Pathology and risk posed by hallucinogens. Current situation.
9. Pathology and risk posed by new synthetic substances. Current situation.

10. Pathology and risk posed by stimulants of the central nervous system (CNS). Amphetamines, others. Current situation.
11. Pathology and risk posed by domestic products. Caustic poisoning. Current situation.

Pathology and risk posed by medicines.

1. Most common forms of toxic risk caused by medicines. Toxic episodes. Principal types of risk. Evolution of the problem. Iatrogenic error and physician responsibility. Current situation.
2. Pathology and risk posed by depressant psychiatric drugs. Current situation.
3. Pathology and risk posed by antidepressants. Current situation.
4. Pathology and risk posed by analgesics. Current situation.
5. Pathology and risk posed by antibiotics. Current situation.
6. Pathology and risk posed by cardiovascular drugs. Current situation.
7. Pathology and risk posed by other medicines: principal groups. Current situation.

Pathology and risk posed by industrial products. Environmental contamination

1. Introduction to industrial toxicology. Toxicological risks in the workplace. Risk of toxic leaks. The principal substance groups. Current situation.
2. Pathology and risk posed by metals. Current situation.
3. Risk and pathology posed by other inorganic industrial products. Current situation.
4. Pathology and risk posed by hydrocarbons. Current situation.
5. Pathology and risk posed by hydrocarbon derivatives. Current situation.
6. Pathology and risk posed by pesticides. Current situation.
7. Chemical contamination of the environment. General concepts. Impact on health. Legal implications. Current situation.
8. Air pollution. Principal types of risk. Current situation.
9. Chemical contamination of water. Principal types of risk. Current situation.
10. Chemical contamination of foods. Principal types of risk. Current situation.

TEACHING STRUCTURE

LEGAL MEDICINE

Theory classes

Thanatology.
Forensic traumatology.
Forensic sexology.
Forensic genetics.
Medical law.
Forensic psychopathology.
Occupational medicine.

Seminars

Documentation.
Responsibility. Private prosecution and legal action.
Forensic pathology. Violent death. Medico-legal autopsy.

Practical training

The location of practical work in Forensic Genetics will be determined by the laboratory equipment available in each site.

The possibility of access to judicial premises and proceedings (Institute of Forensic Anatomy, Clinical Medico-Forensic Service, courtrooms and hearings) will determine the location of the corresponding practical training.

- Medico-legal autopsy.

- Assessment of damage to the body. Injuries. Disabilities.
- Forensic genetics. Genetic identification. Human polymorphisms.

TOXICOLOGY

Theory classes

General toxicology

General epidemiology of poisoning.
General clinical aspects of poisoning.
General therapeutics of poisoning.
Principal mechanisms of action of toxins.

Seminars

Descriptive toxicology

Toxic risk of medicines.
Toxic risk of habit-forming substances.
Toxic risk of industrial products.
Risk posed by chemical environmental contaminants.
Toxic risks in the workplace.
Other aspects of toxic risk.

Practical hospital training

The location of the practical training will be determined by availability and equipment of laboratories and access to patients.

- Attending to poisoned patients.
- Assessment of blood alcohol level.
- General overview of laboratory practices in toxicology.

TEACHING METHODOLOGIES AND LEARNING RESOURCES

LEGAL MEDICINE

Teaching will be divided into the following types:

1. Theory classes on the basic concepts of the subject.
2. Seminars in small groups, which will be used to cover practical and social topics (responsibility, complaints, medico-legal documents, diagnosis of death).
3. Practical training, depending on the possibility of access to judicial institutions (Institute of Forensic Anatomy).

TOXICOLOGY

Teaching will be divided into the following types:

1. Theory classes on the basic concepts of the subject.
2. Seminars in small groups, which will be used to cover practical and social topics (drugs, medicines, contaminants, therapeutics).
3. Practical teaching, depending on access to hospital premises and available equipment.