

**MEDICAL UNIVERSITY – PLOVDIV
FACULTY OF MEDICINE**

SYLLABUS

IN

**OCCUPATIONAL DISEASES AND
TOXICOLOGY**

**Approved by the Department Council - Protocol № 39/30.01.2020
Confirmed by the Faculty Council - Protocol №5/08.07.2020**

OCCUPATIONAL DISEASES AND TOXICOLOGY
Syllabus

Discipline	Final exam/ semester	Academic hours				Academic hours in years and semesters	
		Total	Lectures	Practices	ECTS	1 st year	
Occupational Diseases and Toxicology	VI					1 st sem.	2 nd sem.
		45	15	30	2	1/2	

DISCIPLINE:

Occupational diseases and toxicology

**TYPE OF DISCIPLINE ACCORDING TO THE UNIFORM STATE
REQUIREMENTS:**

Obligatory

LEVEL OF QUALIFICATION:

Master /M/

FORMS OF TRAINING:

Lectures, practices, self-preparation.

YEAR OF TRAINING:

3rd year

DURATION OF TRAINING:

One semester

ACADEMIC HOURS:

15 hours lectures, 30 hours practices

TECHNICAL EQUIPMENT APPLIED IN THE TRAINING:

Multimedia products; audio-visual materials; posters, medical histories, projects, tables, diagrams, and other non-verbal visuals, consistent with the lectures and practices' topics; discussions; demonstrations of clinical cases and diagnostic methods and devices; analysis and interpretation of clinical data and paraclinical studies; therapeutic agents and protocols for treatment of different nosological units; legal regulations and normative documents on occupational diseases related to their notification, registration, confirmation, appealing and reporting, criteria for acceptance of occupational character of diseases, List of occupational diseases, etc.; practical situational tasks; reference materials in order to develop students' skills for individual practice; thematic essays; preventive programmes.

FORMS OF EVALUATION:

Tests, discussions and interviews on the conspectus questions, solving clinical cases, thematic essays

EVALUATION CRITERIA:

The evaluation is formed of current semester academic control and final grade from the passed semester exam

ASPECTS OF EVALUATION CRITERIA:

Participation in discussions, solving clinical cases, tests, thematic essay

SEMESTER EXAM:

Yes/Entry Test, Written and Oral Exam.

STATE EXAM:

None

LECTURER:

Assoc. Prof. Zlatka Paskaleva, MD, PhD

DEPARTMENT:

Second Department of Internal Medicine

ANNOTATION

The course "Occupational Diseases and Toxicology" enables: to acquire knowledge about the etiological risk factors of the working environment and the labor process (physical, chemical, biomechanical, biological, dust, fibers, aerosols, gases, smoke and vapours) and household toxic agents (medicines, industrial and household poisons, agricultural plant protection products, technical liquids, toxic gases, biological poisons from plants and animals, narcotics) and the circumstances in which they may arise; learning of the pathophysiological mechanisms that induce occupational diseases and household intoxications; knowledge of the typical clinical manifestations caused by the impact of occupational risk factors and xenobiotics on the human body; acquisition of diagnostics and treatment skills, poison recognition methods and first-aid in intoxications, specializing in specific detoxication and antidote treatment; knowledge of the criteria for occupational diagnosis of diseases, disclosure of a recognition procedure for the occupational origin of certain disease; awareness of the occupational diseases expertise; preventive measures.

BASIC AIMS OF THE DISCIPLINE

1. Acquiring knowledge and skills for diagnosis and adequate behavior in patients with suspected occupational disease or acute poisoning with xenobiotics:
 - mastering of the peculiarities of occupational and toxicological history and physical status;
 - objectification of occupational risk: interpretation of the occupational anamnesis and protocols for the investigation of the working environment and other documents on occupational exposure.
2. Erection of a working diagnosis and differential diagnosis:
 - appointment of basic and specific studies;
 - clinical evaluation - interpretation of laboratory and instrumental data, development of specific and non-specific complexes of syndromes, differential diagnosis, and acquisition of skills for a correct therapeutic approach.
3. Behavior in first medical aid, early specialized care, treatment.
4. Acquainting with the normative documents related to occupational diseases and skills to manage them.
5. Knowledge of the differences between occupational disease, occupational accident and work-related disease.
6. Knowledge of the principles for the diagnosis of occupational diseases and the criteria for assessing the occupational origin of the diseases.
7. Learning of the principles of occupational disease expertise.
8. Preparation of specific documentation in toxicology and occupational diseases.
9. Application of all modern forms, methods and means for primary (prevention of the occurrence of occupational disease), secondary (early detection of occupational disease) and tertiary (elimination of long-term effects of occupational disease and improvement of patient prognosis) prevention as a collection of medical and non-medical events to achieve better health and quality of life through isolation of risk factors (prevention of premorbidity), disease prevention and reducing their consequences.

EXPECTED RESULTS

When completing the training students should:

- be familiar with the normative documents related to occupational diseases and
- skills to manage them;
- have mastered knowledge of the most common occupational diseases, occupational accidents and work-related illnesses and their management;
- have acquired professional knowledge of acute and chronic chemical poisoning and how to act in such pathology;
- have knowledge of the principles of prevention and expertise of these disabilities.

Lectures
3rd course, 6th semester

№	Theme	Academic hours
1.	Introduction to occupational pathology. Legislation covering administration of occupational diseases. Definition of occupational disease and occupational accident. Classifications of occupational diseases. List of occupational diseases. Basic principles of diagnostics, treatment, expertise and medical prophylaxis.	2 h
2.	Toxicokinetics, toxicodynamics and metabolism in acute exogenous poisonings. Occupational poisoning by heavy metals - lead, mercury, cadmium, manganese, chromium, nickel, arsenic - absorption, metabolism, excretion, pathogenesis, clinical manifestations, early diagnosis, differential diagnosis, treatment. Principles of antidote therapy.	2 h
3.	Chronic occupational intoxications by organic solvents - petrol, benzene, amino- and nitro-derivatives of benzene - clinic, diagnostics, exposition tests, treatment. Occupational intoxications by irritant gases - chlorine, sulfur, nitrogen, fluorine and CO. Pesticide intoxications - classification, pathogenesis, clinical manifestations, treatment, prophylaxis. Occupational poisoning by plastics.	2 h
4.	Occupational diseases of the nervous system (radiculopathies, mono- and polyneuropathies, encephalopathies) and musculoskeletal system (epicondylitis, tendomyosis, de Quervain's disease, tendonitis, peri-arthritis, bone and joint disorders)	2 h
5.	Vibration disease - definition, classification, etiology, pathogenesis. Hand-arm and whole-body vibration disease – signs and symptoms, methods of investigation, diagnosis, differential diagnosis, treatment, medical expertise and prevention.	2 h
6.	Pneumoconioses – definition, classifications, etiology, pathogenesis. Silicosis. Silicatosis - asbestosis, talcosis, kaolinosis, coal pneumoconiosis - clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise and prevention.	2 h
7.	Occupational allergic diseases. Occupational bronchial asthma. Byssinosis. Hypersensitivity pneumonitis. Occupational skin diseases. Noise-induced hearing loss. Occupational disorders of the vestibular and visual analyzers. Occupational neoplasms. Occupational diseases by biological risk factors.	3 h

Total: 15 hours

Practices
Occupational Diseases
3rd course, 6th semeste

№	Theme	Academic hours
1.	Basics of occupational pathology. Definition, classifications, List of occupational diseases. Basic principles of diagnostics, treatment, expertise and medical prophylaxis of occupational diseases.	2 h
2.	Occupational intoxications by heavy metals and organic solvents – clinical manifestations, diagnostic principles and criteria, labor-expert assessment.	2 h
3.	Occupational plastics disorders. Occupational poisonings by pesticides and toxic gases.	2 h
4.	Pneumoconioses - definition, classification. Silicosis. Silicatoses. Coal worker's pneumoconiosis.	2 h
5.	Occupational allergic diseases – classification. Occupational bronchial asthma - etiology, diagnostic criteria, treatment, expertise. Chronic occupational bronchitis - classification, etiopathogenesis, diagnosis, criteria for occupational diagnosis, treatment, expertise.	2h
6.	Occupational diseases of the nervous and musculoskeletal systems.	2 h
7.	Vibration disease – classification. Hand-arm and whole-body vibration disease. Principles and methods of diagnosis of occupational diseases by vibration and biomechanical factors. Occupational neoplasms	3 h

Total: 15 h.

Practices
Clinical Toxicology
3rd course, 6th semester

№	Theme	Academic hours
1.	Organization and structure of toxicological care. Etiology, epidemiology, classification of poisonings. Basic terms and concepts in clinical toxicology. Toxic-allergic shock.	3 h
2.	Toxicokinetics, toxicodynamics and metabolism in acute exogenous intoxication. Pathogenesis, diagnosis, principles and methods of acute poisoning therapy. Unified therapeutic scheme.	2 h
3.	Acute poisoning by neurotropic drugs (benzodiazepines, barbiturates, neuroleptics, antidepressants) - peculiarities of function depression of the central nervous system, clinical course, diagnostic criteria, differential diagnosis. Therapeutic principles and methods.	2 h
4.	Acute poisoning by narcotic analgesics - classification, pathogenesis, clinical syndromes, diagnostic and therapeutic criteria. Acute poisoning by antipyretics (aspirin, paracetamol), antihypertensive drugs and cardiac glycosides.	2 h
5.	Acute poisoning by pesticides (organophosphate, organochlorine, carbamates and dithiocarbamates, pyrethroids). Acute poisoning by inorganic acids and bases. Pathogenesis, clinical features and course. Diagnostic criteria. Early and late complications. First medical care and life-saving actions. Therapeutic principles and methods.	6 h
6.	Intoxications by biological poisons - snake poison, arthropods, mushrooms. Diagnosis, phalloid mushroom intoxication, emergency pre-hospital medical care, hospital treatment. Factors determining the high risk of fatal outcome in phalloid mushroom poisoning.	2 ч.
7.	Acute poisoning by alcohols (ethyl, methyl, ethylene glycol). Pathogenesis of mono- and polyvalent alcohol poisoning. Clinical features and course peculiarities. Factors determining the high risk of fatal outcome in this type of intoxication. General and specific clinical syndromes and symptoms. Diagnostic criteria. Differential diagnosis. Principles and methods of treatment. Therapeutic principles and methods.	2ч.

Total: 15 h

LECTURES - THESES

LECTURE № 1 – 2 academic hours

INTRODUCTION TO OCCUPATIONAL PATHOLOGY

1. Definition according to the Ordinance on the Procedure for Notification, Registration, Confirmation, Appealing and Reporting of Occupational Diseases.
2. Legislation covering administration of occupational diseases.
3. Classifications of occupational diseases.
4. List of occupational diseases.
5. Basic principles of diagnosis, differential diagnosis, treatment, expertise.
6. Paraoccupational diseases.
7. Prophylaxis of occupational diseases.

LECTURE № 2 – 2 academic hours

BASIC CONCEPTS IN GENERAL TOXICOLOGY- 1 academic hour

1. Poison, poisoning, toxicity, dose, critical effect, material and functional cumulation, acute and chronic intoxication, remote effects, an allergic effect, idiosyncrasy.
2. Toxicokinetics, toxicodynamics and metabolism in acute exogenous poisonings.
3. Toxic aggression: local toxic effects, general toxic processes.
4. Disabling mechanisms and phenomena.
5. Natural (physiological) detoxification: toxicokinetics, spontaneous mechanical detoxification, metabolic detoxification - metabolism, excretion.

OCCUPATIONAL POISONING BY HEAVY METALS – 1 h academic hour

1. Occupational intoxications by lead /chronic saturnism/, mercury /chronic mercurialism/, manganese, cadmium, chromium, nickel, arsenic: absorption, metabolism, excretion, etiopathogenesis, features in the clinical picture and the course of chronic occupational intoxications; diagnosis; treatment; medical expertise and prophylaxis.
2. Principles of antidote therapy.

LECTURE № 3 – 2 academic hours

OCCUPATIONAL CHRONIC INTOXICATIONS BY ORGANIC SOLVENTS, GASEOUS CHEMICAL COMPOUNDS, PESTICIDES

1. Occupational poisoning by organic solvents – petrol, benzene, amino- and nitro-derivatives of benzene: etiopathogenesis, clinical manifestations, diagnosis, exposure tests, treatment, medical expertise and prophylaxis.
2. Occupational damages by acids and bases: etiopathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise and prophylaxis.
3. Occupational injuries by irritating vapors and gases: etiopathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise and prophylaxis.

4. Pesticide intoxications - classification, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise and prophylaxis. Organophosphorus and organochlorine pesticide poisoning.

OCCUPATIONAL INTOXICATIONS BY PLASTICS

1. Definition, classification, pathogenesis.
2. The most common intoxications in the clinical practice by: ethylene, styrene, vinyl cyanide, methyl methacrylate, vinyl chloride – the toxic effect of acute and prolonged exposure, isocyanates.
3. Vinyl chloride disease - nature, pathogenesis, features of the clinical picture, diagnosis and treatment.
4. General principles of diagnosis and treatment of occupational intoxications by monomers of synthetic resins and plastics.
5. Medical expertise and prevention.

LECTURE № 4 - 2 academic hours

OCCUPATIONAL DISEASES OF THE NERVOUS AND MUSCULOSKETAL SYSTEMS

1. Occupational diseases of the peripheral nervous system: radiculopathies, mononeuropathies, polyneuropathies - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
2. Occupational diseases of the central nervous system: cerebraesthesia, encephalopathy - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
3. Occupational diseases of the musculoskeletal system: tendomyositis, epicondylitis, tendovaginitis, peri-arthritis, arthrosis, osteoporosis - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
4. Prophylaxis of occupational diseases of the nervous and musculo-skeletal system.

LECTURE № 5 - 2 academic hours

VIBRATION DISEASE

1. Vibration disease: definition, classification.
2. Hand-arm vibration disease – etiology, pathogenesis, clinical features and particularities, diagnostic criteria, differential diagnosis, principles of treatment, medical expertise and prophylaxis.
3. Whole-body vibration disease – etiology, pathogenesis, clinical features and particularities, diagnostic criteria, differential diagnosis, principles of treatment, medical expertise and prophylaxis.

LECTURE № 6 - 2 academic hours

PNEUMOCONIOSES

1. Classification of pneumoconioses.
2. Silicosis – definition, etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment, medical expertise, prophylaxis.
3. Silicatoses – definition, asbestosis, talcosis, kaolinosis: etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment, medical expertise, prophylaxis.
4. Coal pneumoconiosis - etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment, medical expertise, prophylaxis.
5. Occupational neoplasms - etiology, pathogenesis, clinical features and particularities, diagnostic criteria, differential diagnosis, treatment, medical expertise and prevention.

LECTURE № 7 - 3 academic hours

OCCUPATIONAL ALLERGIC DISEASES. OCCUPATIONAL SKIN DISEASES. OCCUPATIONAL DISEASES BY BIOLOGICAL RISK FACTORS.

1. Classification of occupational allergic diseases.
2. Occupational allergic diseases of the lungs.
 - Occupational bronchial asthma - etiopathogenesis, criteria for diagnosis, differential diagnosis, treatment, medical expertise.
 - Byssinosis - etiology, pathogenesis, signs and symptom, diagnosis, differential diagnosis, treatment, medical expertise.
 - Hypersensitivity pneumonitis - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
3. Occupational allergic diseases of the upper respiratory tract - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
4. Occupational allergic skin diseases: dermatitis, eczema - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
5. Occupational allergic diseases of the visual analyzer - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
6. Prophylaxis of occupational allergic disease.
7. Occupational skin diseases.

NOISE-INDUCED HEARING LOSS. OCCUPATIONAL DISORDERS OF THE VESTIBULAR AND VISION ANALYZERS. OCCUPATIONAL UPPER RESPIRATORY PATHWAYS DISEASES. OCCUPATIONAL DISEASES BY BIOLOGICAL RISK FACTORS. OCCUPATIONAL NEOPLASMS

1. Noise-induced hearing loss - etiopathogenesis, clinical manifestations, diagnosis, treatment, medical expertise, prophylaxis.
2. Occupational vestibulopathies - etiology, clinical characteristics, diagnosis, treatment and prophylaxis.
3. Occupational eye diseases.
4. Occupational diseases of the upper respiratory tract (nose and nasal passages, paranasal sinuses, pharynx, and larynx) - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
5. Occupational diseases by biological agents - criteria for occupational diagnosis.
6. Occupational neoplasms.

PRACTICES – THESES OCCUPATIONAL DISEASES

PRACTICE № 1 - 2 academic hours

FOUNDATIONS OF OCCUPATIONAL PATHOLOGY – INTRODUCTION

1. Definition of an occupational disease and an occupational accident, differences between occupational diseases and occupational accidents;
2. Classifications of occupational diseases.
3. Taking occupational history and analyzing the data.
4. Main normative documents in the field of occupational medicine: administrative procedure for the regulation of an occupational disease.
5. Specific legal consequences for the confirmation of an occupational disease.
6. Ordinance on the Procedure for Notification, Registration, Confirmation, Appeal and Reporting of Occupational Diseases.
7. List of occupational diseases.
8. Criteria for diagnosis and assessment of occupational diseases.
9. Basic principles of treatment, expertise and medical prophylaxis of occupational diseases.

PRACTICE № 2 - 2 academic hours

OCCUPATIONAL INTOXICATIONS BY HEAVY METALS AND ORGANIC SOLVENTS

1. Occupational intoxications, etiology, pathogenesis, clinical picture, organotropism, specificity of toxic effects, principles and criteria in diagnostics and labor-expert assessment of patients with occupational intoxications, treatment:
 - Lead poisoning;
 - Mercury poisoning and organic and inorganic mercury compounds;
 - Cadmium poisoning;
 - Manganese poisoning;
 - Poisoning with arsenic, copper, zinc, nickel and chromium (toxic effects, carcinogenic risk);
 - laboratory constellations.
2. Poisoning by organic solvents – diagnosis, treatment.
 - Petrol;
 - Benzene;
 - Nitro- and amino-derivatives of benzene.
3. Presentation and discussion of clinical cases.
4. Individual work with patients

PRACTICE № 3 - 2 academic hours

OCCUPATIONAL HAZARDS IN PLASTIC INDUSTRY. OCCUPATIONAL PESTICIDES INTOXICATIONS. OCCUPATIONAL DISORDERS CAUSED BY IRRITATIVE GASES.

1. Common plastics intoxications - specificity of toxic effects, clinical picture, diagnostics, treatment, labor-expert assessment, carcinogenic risk, labor-expert assessment:
 - Ethylene;
 - Styrene;
 - Methyl methacrylate;
 - Acrylonitrile;
 - Isocyanates.
 - Vinyl chloride disease.
2. Occupational pesticides intoxications:
 - Organophosphorus pesticide poisoning;
 - Organochlorine pesticide poisoning.
3. Occupational toxic gases intoxications:
 - Carbon monoxide poisoning;
 - Cyanide poisoning;
 - Nitrogen oxides poisoning;
 - Chlorine poisoning;
 - Fluoride and hydrogen fluoride poisoning;
 - Sulfur dioxide poisoning;
 - Hydrogen sulfide poisoning.
4. Individual work with patients, discussions.

PRACTICE № 4 - 2 academic hours

PNEUMOCONIOSES

1. Pneumoconioses - definition, classifications.
2. Pathogenesis.
3. Silicosis - definition, etiology, pathogenesis, clinical-radiographic-morphological and ILO classification, clinical picture, special forms of silicosis, diagnostic criteria, differential diagnosis, treatment, labor-expert assessment. Presentation and discussion of clinical cases. Demonstration of pulmonary imaging in silicosis patients.
4. Silicatoses - definition, classification.
 - Asbestos induced occupational injuries - classification. Clinical picture, diagnosis, differential diagnosis, treatment, and labor-expert assessment of pulmonary asbestosis. Asbestos as a carcinogen.
 - Talcosis
5. Coal worker's pneumoconiosis - definition, etiology, pathogenesis, forms, clinical picture, diagnosis, treatment, labor-expert assessment.
6. Individual work with patients, discussions.

PRACTICE № 5 - 2 academic hours

OCCUPATIONAL ALLERGIC DISEASES. OCCUPATIONAL BRONCHITIS

1. Classification of occupational allergic diseases.

2. Occupational bronchial asthma - definition, etiology, pathogenesis, classification, clinical picture, basic criteria for diagnosis and evaluation of occupational etiology of asthma, treatment, labor-expert assessment;
3. Occupational rhinitis - definition, etiology, pathogenesis, classification and forms - ARIA, clinical picture, criteria for diagnosis and evaluation occupational etiology of rhinitis, principles of treatment, pharmacotherapy, specific immunotherapy, labor-expert assessment.
4. Occupational conjunctivites.
5. Occupational contact allergic dermatitis - definition, etiology, pathogenesis, clinical picture, diagnostic criteria, treatment and labor-expert assessment.
6. Occupational chronic bronchitis:
 - Definition, etiology, pathogenesis, classification.
 - Particularities in the clinical picture and the course of individual forms of occupational bronchitis.
 - Basic criteria for assessing the occupational nature of chronic bronchitis.
 - Differential diagnosis, treatment, occupational expert evaluation of occupational chronic bronchitis.
10. Presentation and discussion of clinical cases.

PRACTICE № 6 - 2 academic hours

OCCUPATIONAL DISEASES OF THE NERVOUS AND MUSCULOSKELETAL SYSTEM.

1. Occupational diseases of the peripheral nervous system: radiculopathies, mononeuropathies, polyneuropathies - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
11. Upper limb autonomic polyneuropathy (distal autonomic neuropathy):
 1. Definition;
 2. Occupational etiological risk factors, work groups at risk;
 3. Pathogenesis and pathomorphology;
 4. Signs and symptoms;
 5. Diagnostic criteria;
 6. Treatment, labor-expert assessment.
2. Occupational diseases of the central nervous system: cerebraesthesia, encephalopathy - etiology, pathogenesis, diagnosis, differential diagnosis, treatment.
3. Occupational diseases of the musculoskeletal system: tendomyositis, epicondylitis, periartthritis, arthrosis, osteoporosis - etiology, pathogenesis, diagnosis, differential diagnosis, treatment, medical expertise.
4. Prophylaxis of occupational diseases of the nervous and musculoskeletal system.
5. Presentation and discussion of clinical cases.

PRACTICE № 7 - 3 academic hours

VIBRATION DISEASE - CLASSIFICATION. HAND-ARM AND WHOLE-BODY VIBRATION DISEASE. OCCUPATIONAL NEOPLASMS

1. Vibration disease:
 - Definition, classification, pathogenesis.
 - Workers at risk.
 - Clinical manifestations of hand-arm vibration disease.
 - Clinical manifestations of whole-body vibration disease.
 - Criteria for diagnosis, differential diagnosis.
 - Treatment, labor-expert assessment.
 - Presentation and discussion of patients with vibration disease.
2. Methods of investigation - indications, technique of performance, interpretation of data:
 - Imaging diagnostics - X-ray and CT, MRI;
 - EMG and ENMG;
 - Distal Doppler sonography, angiography of the upper limbs;
 - Cold provocation test of the limbs;
 - Palesthesiometry;
 - Rheodermometry;
 - Thermometry;
 - Alternating dynamometry;
 - Capillaroscopy.
3. Occupational neoplasms.

PRACTICES – THESES CLINICAL TOXICOLOGY

PRACTICE № 1 - 3 academic hours

ORGANIZATION AND STRUCTURE OF TOXICOLOGICAL CARE IN BULGARIA. ETIOLOGY, EPIDEMIOLOGY, CLASSIFICATION OF POISONINGS. BASIC TERMS AND CONCEPTS IN CLINICAL TOXICOLOGY. TOXOALLERGIC SHOCK (anaphylaxis)

1. Outpatient toxicological care in Bulgaria.
2. Organization and structure of hospital toxicological care. Composition, structure and functions of the Regional Toxicology Center.
3. Basic concepts in clinical toxicology.
4. Emergency measures in acute exogenous poisoning.
5. Toxoallergic shock (anaphylaxis):
 - Definition;
 - Etiology;
 - Pathogenesis;
 - Clinical manifestations;
 - Features in the clinical course of various forms of anaphylactic shock, foudroyant form of anaphylactic shock – characteristics;
 - Diagnosis criteria;
 - Differential diagnosis;
 - Principles and methods of treatment.

PRACTICE № 2 - 2 academic hours

TOXICOKINETICS, TOXICODYNAMICS AND METABOLISM IN ACUTE EXOGENOUS INTOXICATION. PATHOGENESIS, DIAGNOSTICS, TREATMENT, BEHAVIOR IN THE ACUTE INTOXICATION. UNIFIED THERAPEUTIC SCHEME.

1. Poisoning pathogenesis - toxicokinetics and toxicodynamics.
2. Stages of toxicokinetics:
 - Initial stage;
 - Hematogenous stage;
 - Organocellular stage;
 - Elimination stage.
3. Clinical significance of each stage in assessing the severity of intoxication and choice of deuration-detoxification method.
4. Principles of diagnosis of acute exogenous intoxications - role of toxicological history, clinical features and paraclinical methods of investigation.
5. Toxochemical analysis essence and significance in the diagnosis of poisoning.
6. Practical life-saving and detox procedures - demonstration of techniques, acquaintance with the equipment and acute poisoning patients' medical documentation.
7. Entry route deuration methods. Gastric lavage - essence of the procedure, indications and contraindications, procedure technics - demonstration in patients
8. Blood deuration methods: forced diuresis, extra renal methods of hemodeuration, exchange transfusion.
9. Detoxification with antidote - antidote definition, classification of antidote agents by mechanism of action, place of antidotes in the unified therapeutic scheme for acute poisoning treatment, antidotes most commonly used in toxicological practice.
10. Diagnostic and therapeutic algorithms for different types of intoxications.

PRACTICE № 3 - 2 academic hours

ACUTE POISONING BY NEUROTROPIC DRUGS (BENZODIAZEPINES, BARBITURATES, NEUROLEPTICS, ANTIDEPRESSANTS)

1. Indications for the usage of neurotropic drugs in clinical practice, general and specific clinical manifestations of the acute poisoning with each neurotropic drug group, diagnostic criteria of acute poisoning.
2. Specific clinical features of the benzodiazepine poisoning, clinical manifestations of the cerebellar syndrome.
4. Specific features of barbiturate intoxications, barbiturate coma - classification according to the severity of functional depression of the central nervous system, clinical syndromes in acute barbiturate poisoning.
5. Acute poisoning by neuroleptics - classification, pathogenesis, clinical symptoms.
6. Pathogenesis, clinic, diagnosis and treatment of antidepressant acute poisoning.
7. Basic hospital treatment measures in neurotropic drugs poisoning.

PRACTICE № 4 - 2 academic hours

ACUTE POISONING BY NARCOTIC ANALGESICS - CLASSIFICATION, PATHOGENESIS, CLINICAL SYNDROMES, DIAGNOSTIC AND THERAPY CRITERIA.

ACUTE POISONING BY ANTIPYRETICS (ASPIRIN, PARACETAMOL), ANTIHYPERTENSIVE DRUGS AND CARDIAC GLYCOSIDES

1. Classification of opioid analgesics.
2. Pathogenesis, clinical manifestations (main clinical syndromes and symptoms), diagnostic criteria (anamnestic, clinical and paraclinical) of opioid analgesics intoxication.
3. Complications of acute opioid intoxication – conditions creating high risk of fatal outcome
4. Principles and methods of treatment of acute poisoning by narcotic analgesics, antidote therapy.
5. Mechanisms of heroin addiction. Clinical manifestations and treatment of withdrawal syndrome.
6. Acute aspirin and paracetamol poisoning - pathogenesis, clinical picture, diagnostic criteria, treatment
7. Acute poisoning by antihypertensive drugs - classification, pathogenesis of poisoning, clinical picture, diagnosis, treatment methods and tools
8. Intoxications by digitalis glucosides - acute and chronic.
 - Cardiac glycosides classification.
 - Indications for the use of cardiac glycosides in clinical practice.
 - Pathogenesis of cardiac glycosides intoxication.
 - Specific cardiotoxicity of cardiac glycosides.
 - Clinical syndromes in acute cardiac glycosides poisoning.
 - Conditions leading to a high risk of fatal outcome in these intoxications.
 - Peculiarities in the course of chronic digitalis intoxications.
 - Diagnostic criteria. Differential diagnosis.
 - Principles and methods for the treatment of acute and chronic poisoning.

PRACTICE № 5 - 2 academic hours

ACUTE POISONING BY PESTICIDES, ACIDS AND BASES

1. Acute poisoning by pesticides
 - Poisoning by organophosphorus pesticides. Classification, chemical structure peculiarities, pathogenesis, clinical course of the poisoning. Main clinical syndromes. Diagnostic criteria. Complications with a high risk of fatal outcome. Differential diagnosis. Principles of treatment of acute poisoning by organophosphorus pesticides. Role of antidote detoxification in the complex therapy of poisoning.
 - Poisoning by organochlorine pesticides. Classification, chemical structure peculiarities, pathogenesis, clinical course. Main clinical syndromes. Diagnostic criteria. Differential diagnosis. Therapeutic principle and methods.
 - Poisoning by carbamates and dithiocarbamates pesticides. Clinical course and pathogenesis peculiarities. Main clinical symptoms. Diagnostic criteria. Differential diagnosis. Therapeutic principle and methods.

- Poisoning by pyrethroids pesticides. Clinical course and pathogenesis peculiarities. Diagnostic criteria. Differential diagnosis. Therapeutic principle and methods.
- 2. Acute poisoning by acids and bases
 - Acute poisoning by inorganic acids. Clinical course peculiarities. Diagnostic criteria. Early and late complications. Therapeutic principles and methods.
 - Acute poisoning by inorganic bases. Clinical course peculiarities. Diagnostic criteria. Early and late complications. Therapeutic principles and methods

PRACTICE № 6 - 2 academic hours

POISONING BY BIOLOGICAL POISONS - SNAKE POISON, ARTHROPODS, MUSHROOMS

1. Current epidemiology.
2. Phalloid mushroom intoxication – etiology, pathogenesis, clinical features. Diagnostic criteria. Differential diagnosis. Principles and methods of treatment. Interpretation of laboratory data. Laboratory constellation in this type of poisoning. Factors determining the high risk of fatal outcome in phalloid mushroom poisoning.
3. Poisoning by venomous snakes - types, pathogenesis, clinical features picture and course, criteria for diagnosis. Principles and methods of prehospital and hospital treatment in this type of intoxication.

PRACTICE № 7 - 2 academic hours

ACUTE POISONING BY ALCOHOLS (ETHYL, METHYL, ETHYLENE GLYCOL).

1. Toxic-chemical characteristics of alcohols
2. Features in the pathogenesis and clinical picture of acute intoxication with ethyl alcohol
3. Features in the pathogenesis and clinical picture of acute intoxications with methyl alcohol
4. Features in the pathogenesis and clinical picture of acute intoxications with antifreeze
5. Main clinical syndromes in poisoning by mono- (ethanol, methanol) and polyvalent (ethylene glycol) alcohols
6. Factors determining the high risk of fatal outcome in this type of intoxication.
8. General and specific clinical syndromes and symptoms.
9. Diagnostic criteria. Differential diagnosis
10. Principles and methods of treatment. Antidotes.

TOPICS FOR REPORTS IN OCCUPATIONAL DISEASES

1. Occupational disorders by lead intoxication.
2. Occupational intoxication by mercury.
3. Occupational manganese and cadmium intoxications.
4. Occupational intoxications by organic solvents.
5. Occupational acid and base intoxications.

6. Occupational damage due to occupational physical risk factors in the working environment and the labor process.
7. Occupational allergic diseases.
8. Occupational diseases from static and dynamic physical load and microtrauma.
9. Pneumoconioses.
11. Occupational neoplasms.
12. Occupational diseases of the skin.
13. Occupational diseases of the analysers.
14. Risk assessment and prognosis of occupationally induced diseases, risk profile.

TOPICS FOR REPORTS IN CLINICAL TOXICOLOGY

1. Epidemiology of intoxications.
2. Place of antidote therapy in the treatment of poisoning.
3. Features of drug intoxication nowadays -"Designer drugs", amphetamines, ethamphetamines
4. Features and characteristics of different types of addictions - alcohol, heroin, drugs, etc.
5. Factors determining the high risk of fatal outcome in acute alcohol intoxication.
6. Features of intoxications with poisonous plants and animals.
7. The most poisonous animals and plants around the world.
8. What makes mushrooms a risk factor for human life?

ISSUES FOR INDIVIDUAL TRAINING IN OCCUPATIONAL DISEASES

Theme. INTRODUCTION TO OCCUPATION PATHOLOGY

1. What is the definition of an occupational disease according to the Ordinance on the Procedure for Notification, Registration, Confirmation, Appeal and Reporting of Occupational Diseases?
2. Why is it necessary to have a specific legal framework for occupational diseases?
3. What is the principle of creation of the List of Occupational Diseases and what is its content?
4. What are the types of diseases according to the classifications of occupational diseases?
4. What does a specific occupational disease mean?
5. What does a conditional occupational disease mean?
6. What does a paraoccupational or work-related illness mean?
5. What are the main principles of diagnosis, treatment, expertise in occupational diseases?
6. What are the main preventive measures for occupational diseases?

Theme. VIBRATION DISEASE

1. What is the definition of vibration disease?
2. What are the the jobs at risk of exposure to local (hand-arm) vibration impact?
3. What are the main pathogenetic mechanisms of hand-arm vibration disease?

4. What are the clinical manifestations of hand-arm vibration disease?
5. What are the main methods of investigation for diagnosing hand-arm vibration disease?
6. What are the main jobs at risk for exposure to general (whole-body) vibrations at work?
7. What are the main syndromes manifested in whole-body vibration disease?
8. What diagnostic methods of investigation contribute to whole-body vibration disease?
9. What are the differences between hand-arm and whole-body vibration disease?
10. What is the treatment vibration disease?

Theme. PNEUMOCINIOSES

1. What is the definition of pneumoconiosis?
2. What are the types of pneumoconioses?
3. What is the difference between silicosis and silicatosis?
7. What is the etiology of silicosis?
8. What are the main pathomorphologic changes, clinical manifestations, and methods of investigation of silicosis?
9. What is the definition of silicatosis?
10. What are the most common types of silicatoses?
11. What are the main diagnostic principles of pnevmoconioses?
12. What is characteristic of coal pneumoconiosis?
13. What are the main elements of medical expertise in pneumoconioses?
14. How is asbestosis diagnosed?
15. What are the complications of silicosis?
16. What is the treatment of pneumoconioses?
17. What is the prevention of pneumoconioses?

Theme. OCCUPATIONAL ALLERGIC DISEASES

1. Which allergic diseases can be occupationally determined?
2. What are the main clinical manifestations of bronchial asthma and what are the criteria for occupational diagnosis?
3. What is the etiology and clinical characteristic of the byssinosis?
4. What is hypersensitivity pneumonitis - etiology, clinical picture, diagnosis, treatment?
5. What are the main allergic diseases of the upper respiratory tract?
6. Give examples of occupational allergic diseases to the eye analyzer.
7. Which skin diseases can be occupationally induced?
8. What are the criteria for assessing the occupational origin of occupational allergic diseases?
9. What is the treatment of occupational allergic diseases?
10. What are the measures for prevention of occupational allergic diseases?

Theme. OCCUPATIONAL DISEASES OF THE NERVOUS AND MUSCULOSKELETAL SYSTEMS

1. What diseases of the peripheral nervous system could be occupationally induced?
2. What occupational risk factors may cause occupational diseases of the peripheral nervous system?

3. What are the basic principles for the occupational diagnosis of the musculoskeletal and peripheral nervous system due to overstrain and microtrauma?
4. What are the major occupational risk factors that cause occupational disorders of the central nervous system?
5. What are the most common occupational diseases of the musculoskeletal system?
6. What are the main occupational risk factors that cause occupational musculoskeletal injuries?
7. What methods are used to diagnose occupational nervous and musculoskeletal disorders?
8. What is the treatment of occupational diseases of the nervous system?
9. What is the treatment of occupational musculoskeletal disorders?
10. What are the main preventive measures for occupational diseases of the nervous and musculoskeletal systems?

Theme. OCCUPATIONAL HEALTH EFFECTS CAUSED BY HEAVY METALS, ORGANIC SOLVENTS, ACIDS, BASES, PLASTICS, IRRITATING GASES

1. What are the main syndromes of occupationally induced lead intoxication?
2. What does biomarker of exposure mean?
3. What does biomarker mean?
4. What are the laboratory tests that contribute to the diagnosis of lead intoxication?
5. What are the main clinical syndromes of occupational mercury intoxication?
6. How is mercury intoxication diagnosed?
7. What are the main clinical manifestations of manganese and cadmium poisoning?
8. What are the characteristics of occupational poisoning by organic solvents - petrol, benzene, amino- and nitro-derivatives of benzene?
9. What are the occupational disorders by exposure to acids and bases?
2. What are the manifestations of occupational poisoning by monomers of synthetic resins and plastics?
11. What are the basic principles for diagnosing occupational intoxications?
12. What are the manifestations of occupational poisonings by irritating vapors and gases?
13. What are the typical clinical manifestations of carbon monoxide poisoning?

Theme. OCCUPATIONAL NEOPLASMS

1. What are the main occupational risk factors that have a proven carcinogenic effect?
2. What are the neoplasms caused by arsenic, cadmium, chromium, nickel?
3. What are the neoplasms caused by vinyl chloride, aniline, aromatic amines, benzene, benzidine, betanaphthylamine?
4. What are the neoplastic complications of silicosis, asbestosis?
5. How is the occupational nature of neoplastic diseases proven?
6. What is the prevention of occupational neoplasms?
7. What is typical of the expertise of occupational neoplasms?

Theme. OCCUPATIONAL DISEASES OF BIOLOGICAL FACTORS

1. What are the occupational diseases caused by biological risk factors?

2. What are the risky professions in which these diseases can be observed?
3. What are the main criteria for assessing the occupational nature of an infectious or
4. parasitic disease?
5. What is the treatment and prevention of occupational diseases by biological factors?

Theme. OCCUPATIONAL SKIN DISEASES

1. What are the most common occupational skin diseases?
2. What are the criteria for assessing the occupational genesis of skin diseases?
3. What is the treatment and prevention of occupational skin diseases?

ISSUES FOR INDIVIDUAL TRAINING IN CLINICAL TOXICOLOGY

1. Features of the comatose syndrome in intoxications by various poisons
2. Antidote detoxification - definition of antidote, classification according to the mechanism of action, antidotes often used in practice, indications, doses, method of administration
3. Organophosphorus compounds as a group with high potential for bioterrorism
4. Features of intoxications by cyanide compounds
5. Acute intoxications by carbon tetrachloride
6. Acute quinine poisoning
7. Long-term toxic effects of pesticides - mutagenic, teratogenic, embryotoxic, sensitizing and carcinogenic effects.
8. Main clinical syndromes in toxicology

Bibliography

1. Textbook on occupational diseases. Sofia, Ralkolober, 2010, 104.
2. Hygiene. Vol II. Occupational medicine. Industrial hygiene. Occupational diseases.D. Tsvetkov, Ed. FLAT Ltd., Sofia, 2019. 704.
3. Occupational diseases. V. Nestorova, Z. Stoyneva, G. Prakova, Eds. MU Prof. Paraskev Stoyanov, Varna, 2020, 182.

Conspectus

Occupational Diseases and Toxicology

1. Occupational diseases – definition, classification, List of occupational diseases. Main principles of diagnostics, treatment, expertise and medical prophylaxis.
2. Occupational disease and occupational accident. Expertise of occupational diseases – principles, registration procedures, legal outcomes.
3. Pneumoconioses – definition, classification, etiology, pathogenesis. Silicosis – clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
4. Silicatoses – definition. Asbestosis, talcosis, kaolinosis – etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
5. Coal worker’s pneumoconiosis – etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.

6. Occupational chronic bronchitis – classification, etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, diagnostic criteria for occupational diagnosis, treatment, medical expertise.
7. Occupational respiratory allergic diseases. Occupational bronchial asthma. Byssinosis. Etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, diagnostic criteria for occupational etiology, treatment, medical expertise.
8. Hypersensitivity pneumonitis - etiology, pathogenesis, clinical manifestation, diagnosis, treatment, medical expertise.
9. Occupational intoxications by irritant gasses (fluorine, hydrogen fluoride, chlorine, hydrogen chloride or sulfide, ammonia, sulfur dioxide). Etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
10. Occupational intoxications by nitrogen oxides – etiology, pathogenesis, clinical manifestation, diagnosis, treatment, medical expertise.
11. Occupational intoxication by carbon monoxide - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
12. Occupational intoxications by non-organic lead compound (chronic saturnism) - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
13. Occupational intoxications by organic lead compounds (tetraethyl lead) - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
14. Occupational intoxications by non-organic mercury compounds (mercurialism) - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
15. Occupational intoxications by non-organic manganese compounds - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
16. Occupational intoxications by cadmium compounds - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
17. Occupational intoxications by arsenic compounds - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
18. Occupational intoxications by nickel, chromium and compounds - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
19. Occupational intoxications by organic solvents: petrol - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
20. Occupational intoxications by benzene and its compounds (xylene, styrene, toluene) - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
21. Occupational intoxications by nitro- and amino-benzenes - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
22. Occupational intoxications by carbon disulfide - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
23. Occupational intoxications by monomers of synthetic resins and plastics - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
24. Occupational intoxications by pesticides – classification, occupations at risk, pathogenesis, specific toxicity, clinical manifestations of intoxications by organochlorines, organophosphorus, carbamates, dithiocarbamates, diagnostic and therapeutic algorithm.
25. Lateral and medial epicondylitis - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
26. Tendomyositis of the extrinsic hand extensor muscles - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
27. De Quervain's disease - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.

28. Stenosing flexor tenosynovitis of the fingers (trigger finger) - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
29. Humeroscapular (shoulder) periarthritis - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise.
30. Occupational bone and joint diseases - etiology, pathogenesis, clinical manifestations, criteria for occupational diagnosis, treatment, medical expertise.
31. Occupational radiculopathies - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
32. Occupational distal autonomic neuropathy of the upper limbs - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
33. Mononeuropathies due to median or ulnar nerve entrapment in carpal or cubital tunnel syndromes or in Guyon's canal syndrome - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
34. Hand-arm vibration disease - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
35. Whole-body vibration disease - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
36. Occupational noise-induced hearing loss - etiology, pathogenesis, clinical manifestations, diagnosis, treatment, medical expertise and prophylaxis. Health effects of exposure to ultrasound and infrasound.
37. Occupational skin diseases - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment, medical expertise.
38. Occupational neoplasms - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, criteria for occupational diagnosis, treatment, medical expertise.
39. Occupational diseases by biological risk factors - etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, criteria for occupational diagnosis, treatment, medical expertise.
40. Pathogenesis of intoxications – toxicokinetic mechanisms.
41. Treatment methods of acute intoxications – unified therapeutic scheme, principles, means and methods of poison decontamination at the site of entry, methods for blood depuration (hemodepuration).
42. Antidote detoxification.
43. Acute toxic respiratory injuries.
44. Acute barbiturate intoxications.
45. Acute intoxications with benzodiazepines.
46. Acute intoxications with antidepressants
47. Acute intoxications with narcotics.
48. Acute intoxications with atropine.
49. Acute alcohol intoxications – ethyl, methyl
50. Acute intoxications with ethylene glycol
51. Acute intoxications with tetrachloromethane
52. Acute intoxications with quinine
53. Acute intoxications with antipyretics – aspirin, paracetamol
54. Acute intoxications with cyanide compounds
55. Acute intoxications with digitalis preparations.
56. Snake poison intoxications.
57. Phalloid mushroom intoxications
58. Muscarinic and mycoatropinic mushroom intoxications.
59. Acute alkaline and acidic intoxications

60. Anaphylactic shock – definition, etiology, pathogenesis, types, clinical manifestations, diagnostic and therapeutic algorithms.

Authors of the syllabus:

Assoc. Prof. Z. Stoyneva, MD, PhD,

Assoc. Prof. S. Dermendjiev, MD, Ph

Head of Second Department of Internal Medicine:

Assoc. Prof. V. Andonov, MD, PhD