

### **QUESTIONS FOR PREPARING FOR PRACTICAL LESSON No. 1**

#### **THE TOPIC IS "INTRODUCTION. THE SUBJECT AND TASKS OF PATHOPHYSIOLOGY. MODELING OF PATHOLOGICAL PROCESSES".**

1. Pathological physiology. The subject, the purpose, the tasks, its place among other medical disciplines.
2. The main difference between pathophysiology and other medical disciplines and its significance.
3. Methods of study in pathophysiology.
4. Features of experimental modeling and types of experiment.
5. Features of modeling dental diseases.
6. Historical stages of the development of pathophysiology.

### **QUESTIONS FOR PREPARING FOR PRACTICAL LESSON No. 2**

#### **THE TOPIC IS "GENERAL NOSOLOGY. REACTIVITY AND RESISTANCE OF THE BODY"**

1. The concept of a pathological reaction, a pathological process, a pathological condition, a typical pathological process, examples.
2. Norm, health, disease: definition of the concept. Stages of the disease, outcomes. Specific and non-specific manifestations of the disease. General and local manifestations of the disease, their relationship.
3. Etiology: definition of the concept. The role of causes and conditions in the emergence, development and overcoming of diseases. Features of the etiology of inflammatory diseases of the maxillofacial region.
4. Classification and characterization of etiological factors. Examples.
5. Pathogenesis: definition of the concept. The initial link of pathogenesis. Levels of damage and their manifestations.
6. Causal relationships in pathogenesis: the initial and leading links of pathogenesis, "vicious circles", their role and examples.
7. The importance of studying etiology and pathogenesis. The concept of etiotropic, pathogenetic, symptomatic, sanogenetic, substitution therapy. Principles of disease prevention.
8. Terminal conditions. Dying as a stage process, its characteristics.
9. Pathophysiological foundations of intensive care. Post-resuscitation disorders and post-resuscitation disease.
10. Reactivity of the body: definition of the concept. Types and forms of reactivity. Examples. Methods for assessing reactivity in a patient.
11. Factors of the external and internal environment affecting reactivity. The importance of studying reactivity.
12. The constitution of the body: definition of the concept, classification. The dependence of reactivity on the human constitution.
13. Resistance of the body: definition of the concept, non-specific and specific resistance factors, examples of their violations

### **QUESTIONS FOR PREPARING FOR PRACTICAL LESSON No. 3**

#### **TOPIC "PATHOPHYSIOLOGY OF CELL DAMAGE"**

1. Cell damage: definition of the concept, causes, mechanisms of cell damage. Manifestations of cell damage.
2. Etiological factors causing cell damage: classification. Direct and indirect effects of damaging factors.
3. Specific and non-specific cell changes in case of damage. Reversible and irreversible cell damage, examples.
4. Etiology and mechanisms of disruption of the energy supply of cells. Mitochondrial cytopathies, examples.
5. Mechanisms of damage to cell membranes. The role of oxidative stress in cell membrane damage.
6. Ischemia-reperfusion syndrome: etiology, pathogenesis.
7. The importance of the imbalance of ions and fluids in the pathogenesis of cell damage. The role of  $Ca^{2+}$  in cell damage.
8. Disorders of regulation of intracellular processes. Pathology of the receptor apparatus. Disorders at the level of secondary messengers.
9. Mechanisms of short-term and long-term compensation in response to cell damage. Examples.
10. Types and mechanisms of cell death. Examples of increased and insufficient cell death in pathology.

11. Apoptosis: the mechanism by stages. The significance of apoptosis in norm and pathology.
12. Comparative analysis of cell necrosis and apoptosis.

#### **QUESTIONS FOR PRACTICAL LESSON No. 4**

##### **TOPIC "PATHOPHYSIOLOGY OF ACUTE AND CHRONIC INFLAMMATION"**

1. Inflammation: definition of the concept, local and systemic signs of inflammation, their pathogenesis and interrelation. The biological significance of inflammation.
2. Etiological factors of the inflammatory process.
3. Inflammatory mediators, classification, their sources and role in the formation of inflammation.
4. The stage of alteration. Mechanisms of primary and secondary alterations.
5. Vascular exudative stage in inflammation. The pathogenesis of successive changes in the vessels of the microcirculatory bed during inflammation. A change in the rheology of blood in the focus of inflammation.
6. Pathogenesis of edema in inflammation. The role of biologically active substances in the regulation of vascular wall permeability.
7. Types of exudates, examples. Differences between exudate and transudate.
8. Leukocyte reactions in inflammation: chemotaxis, adhesion, emigration: mechanisms, significance.
9. Phagocytosis in inflammation, stages. Oxygen-dependent and oxygen-independent killing mechanisms. Phagocytosis insufficiency: causes and significance.
10. The stage of proliferation in inflammation: the main stages, mechanisms and types of repair, regulation. Features of periodontal tissue regeneration.

#### **QUESTIONS FOR PRACTICAL LESSON No. 5**

##### **TOPIC "PATHOPHYSIOLOGY OF INFLAMMATORY AND WOUND PROCESSES IN THE MAXILLOFACIAL REGION"**

1. Features of the etiology and pathogenesis of inflammatory diseases of the maxillofacial region. Sialososes and sialadenites.
2. Wound process: general characteristics. Phases of the wound process.
3. Features of the wound process in the maxillofacial region.
4. Features of periodontal tissue regeneration.

#### **QUESTIONS FOR PREPARING FOR PRACTICAL LESSON No. 6**

##### **THE TOPIC IS "PATHOPHYSIOLOGY OF THE IMMUNE SYSTEM. IMMUNODEFICIENCY AUTOIMMUNE DISEASES. ALLERGIES"**

1. Allergy: definition of the concept, classification by Jell and Coombs, general characteristics of allergic reactions.
2. Allergens: definition of the concept, classification. The concept of sensitization and desensitization. Principles of therapy. Allergens in dental practice.
3. The general pathogenesis of allergic reactions. Stages of allergic reactions. Features of the mechanisms of development of GNT and HRT
4. Type I allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
5. Type II allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
6. Type III allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
7. Type IV allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
8. Type V allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
9. Anaphylactoid (pseudoallergic) reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.

## **QUESTIONS FOR PREPARING FOR PRACTICAL LESSON No. 7**

### **THE TOPIC IS "PATHOPHYSIOLOGY OF THE IMMUNE SYSTEM. IMMUNODEFICIENCY AUTOIMMUNE DISEASES"**

1. Autoimmune diseases: definition, etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
2. Features of autoimmune diseases of the oral cavity and maxillofacial region.
3. The role of environmental factors in the development of autoimmune diseases.
4. Primary immunodeficiency conditions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
5. Secondary immunodeficiency conditions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
6. Pathogenesis of manifestations of immunodeficiency in the organs of the oral cavity and maxillofacial region.

## **QUESTIONS FOR PRACTICAL LESSON No. 8**

### **THE TOPIC IS "VIOLATION OF THE BODY'S THERMAL BALANCE. FEVER, HYPERTHERMIA, HYPOTHERMIA"**

1. Thermoregulation processes in the body are normal.
2. Fever: definition of the concept, formation and role in phylogeny and ontogenesis.
3. The etiology of fever. Classification of pyrogens. Mechanisms of action of primary and secondary pyrogens.
4. Stage I of fever (st. incrementi): mechanisms of temperature increase, thermoregulation.
5. Stage II fever (St. fastigii). Classification of fever by the level of temperature rise. Types of febrile reactions, their diagnostic significance.
6. Stage III fever (St. decrementi). Mechanisms of reducing body temperature. An idea of the system of natural antipyretics in the body. The role of heat shock proteins.
7. Changes in metabolism, function of organs and systems in fever. The biological significance of fever. The pathogenesis of manifestations of fever in the oral cavity and maxillofacial region.
8. Characteristics of the concept of acute phase response: definition and role in the protection of the body. The concept of pyrotherapy
9. Acute phase response mediators, their origin and biological effects.
10. The main manifestations of the acute phase response and their pathogenesis. The concept of acute phase reactants.
11. Overheating: definition, etiology, pathogenesis. The differences between overheating and fever.
12. Etiology and pathogenesis of overheating syndromes: heat exhaustion, heat stroke, sunstroke, malignant fever, thermal injury during overstrain (marching fever).
13. Hypothermia: definition, etiology, pathogenesis, manifestations. Therapeutic hypothermia.

## **QUESTIONS FOR PREPARING FOR PRACTICAL LESSON No. 9**

### **THE TOPIC IS "HYPOXIA. ETIOLOGY AND PATHOGENESIS OF THE MAIN TYPES OF HYPOXIA. HYPEROXIA"**

1. Hypoxia. Definition of the concept. Classification. Mechanisms of hypoxic necrobiosis.
2. Hypoxic hypoxia: types, etiology, pathogenesis. Altitude sickness, altitude sickness.
3. Etiology and pathogenesis of hemic hypoxia.
4. Etiology and pathogenesis of circulatory hypoxia
5. Etiology and pathogenesis of histotoxic hypoxia.
6. Hyperoxia as a cause of hypoxia. Hyperoxygenation, therapeutic and pathological effects.
7. Urgent and long-term compensation mechanisms for hypoxia.

## **QUESTIONS FOR PRACTICAL LESSON No. 10**

### **QUESTIONS TO PREPARE FOR THE REVIEW SESSION ON THE TOPICS "INFLAMMATION, FEVER, HYPOXIA, ALLERGIES"**

1. Pathological physiology. The subject, the purpose, the tasks, its place among other medical disciplines.
2. The main difference between pathophysiology and other medical disciplines and its significance.
3. Methods of study in pathophysiology.
4. Features of experimental modeling and types of experiment.
5. Features of modeling dental diseases.
6. Historical stages of pathophysiology development
7. The concept of a pathological reaction, a pathological process, a pathological condition, a typical pathological process, examples.
8. Norm, health, disease: definition of the concept. Stages of the disease, outcomes. Specific and non-specific manifestations of the disease. General and local manifestations of the disease, their relationship.
9. Etiology: definition of the concept. The role of causes and conditions in the emergence, development and overcoming of diseases. Features of the etiology of inflammatory diseases of the maxillofacial region.
10. Classification and characterization of etiological factors. Examples.
11. Pathogenesis: definition of the concept. The initial link of pathogenesis. Levels of damage and their manifestations.
12. Causal relationships in pathogenesis: the initial and leading links of pathogenesis, "vicious circles", their role and examples.
13. The importance of studying etiology and pathogenesis. The concept of etiotropic, pathogenetic, symptomatic, sanogenetic, substitution therapy. Principles of disease prevention.
14. Terminal states. Dying as a stage process, its characteristics.
15. Pathophysiological foundations of intensive care. Post-resuscitation disorders and post-resuscitation disease.
16. Reactivity of the body: definition of the concept. Types and forms of reactivity. Examples. Methods for assessing reactivity in a patient.
17. Factors of the external and internal environment affecting reactivity. The importance of studying reactivity.
18. The constitution of the body: definition of the concept, classification. The dependence of reactivity on the human constitution.
19. Body resistance: definition of the concept, non-specific and specific resistance factors, examples of their violations
20. Cell damage: definition of the concept, causes, mechanisms of cell damage. Manifestations of cell damage.
21. Etiological factors causing cell damage: classification. Direct and indirect effects of damaging factors.
22. Specific and non-specific changes in cells during damage. Reversible and irreversible cell damage, examples.
23. Etiology and mechanisms of disruption of the energy supply of cells. Mitochondrial cytopathies, examples.
24. Mechanisms of damage to cell membranes. The role of oxidative stress in cell membrane damage.
25. Ischemia-reperfusion syndrome: etiology, pathogenesis.
26. The importance of the imbalance of ions and fluids in the pathogenesis of cell damage. The role of  $Ca^{2+}$  in cell damage.
27. Disorders of regulation of intracellular processes. Pathology of the receptor apparatus. Violations at the level of secondary messengers.
28. Mechanisms of short-term and long-term compensation in response to cell damage. Examples.
29. Types and mechanisms of cell death. Examples of increased and insufficient cell death in pathology.
30. Apoptosis: the mechanism by stages. The significance of apoptosis in norm and pathology.
31. Comparative analysis of cell necrosis and apoptosis
32. Inflammation: definition of the concept, local and systemic signs of inflammation, their pathogenesis and interrelation. The biological significance of inflammation.
33. Etiological factors of the inflammatory process.
34. Inflammatory mediators, classification, their sources and role in the formation of inflammation.

35. The stage of alteration. Mechanisms of primary and secondary alterations.
36. Vascular exudative stage in inflammation. The pathogenesis of successive changes in the vessels of the microcirculatory bed during inflammation. A change in the rheology of blood in the focus of inflammation.
37. Pathogenesis of edema in inflammation. The role of biologically active substances in the regulation of vascular wall permeability.
38. Types of exudates, examples. Differences between exudate and transudate.
39. Leukocyte reactions in inflammation: chemotaxis, adhesion, emigration: mechanisms, significance.
40. Phagocytosis in inflammation, stages. Oxygen-dependent and oxygen-independent killing mechanisms. Phagocytosis insufficiency: causes and significance.
41. The stage of proliferation in inflammation: the main stages, mechanisms and types of repair, regulation. Features of periodontal tissue regeneration.
42. Features of the etiology and pathogenesis of inflammatory diseases of the maxillofacial region. Sialoses and sialadenites.
43. Wound process: general characteristics. Phases of the wound process.
44. Features of the wound process in the maxillofacial region.
45. Features of periodontal tissue regeneration
46. Allergy: definition of the concept, classification by Jell and Coombs, general characteristics of allergic reactions.
47. Allergens: definition of the concept, classification. The concept of sensitization and desensitization. Principles of therapy. Allergens in dental practice.
48. The general pathogenesis of allergic reactions. Stages of allergic reactions. Features of the mechanisms of development of GNT and HRT
49. Allergic reactions of type I: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
50. Type II allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
51. Type III allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
52. Type IV allergic reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
53. Allergic reactions of type V: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
54. Anaphylactoid (pseudoallergic) reactions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples
55. Autoimmune diseases: definition, etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
56. Features of autoimmune diseases of the oral cavity and maxillofacial region.
57. The role of environmental factors in the development of autoimmune diseases.
58. Primary immunodeficiency conditions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
59. Secondary immunodeficiency conditions: etiology, pathogenesis, manifestations, principles of therapy and prevention, examples.
60. Pathogenesis of manifestations of immunodeficiency in the organs of the oral cavity and maxillofacial region.
61. Thermoregulation processes in the body are normal.
62. Fever: definition, formation and role in phylogeny and ontogenesis.
63. Etiology of fever. Classification of pyrogens. Mechanisms of action of primary and secondary pyrogens.
64. Stage I of fever (st. incrementi): mechanisms of temperature rise, thermoregulation.
65. Stage II fever (St. fastigii). Classification of fever by the level of temperature rise. Types of febrile reactions, their diagnostic significance.
66. Stage III fever (St. decrementi). Mechanisms of reducing body temperature. An idea of the system of natural antipyretics in the body. The role of heat shock proteins.

67. Changes in metabolism, function of organs and systems in fever. The biological significance of fever. The pathogenesis of manifestations of fever in the oral cavity and maxillofacial region.
68. Characteristics of the concept of acute phase response: definition and role in the protection of the body. The concept of pyrotherapy
69. Mediators of the acute phase response, their origin and biological effects.
70. The main manifestations of the acute phase response and their pathogenesis. The concept of acute phase reactants.
71. Overheating: definition, etiology, pathogenesis. The differences between overheating and fever.
72. Etiology and pathogenesis of overheating syndromes: heat exhaustion, heat stroke, sunstroke, malignant fever, thermal injury during overstrain (marching fever).
73. Hypothermia: definition, etiology, pathogenesis, manifestations. Therapeutic hypothermia.
74. Hypoxia. Definition of the concept. Classification. Mechanisms of hypoxic necrobiosis.
75. Hypoxic hypoxia: types, etiology, pathogenesis. Altitude sickness, altitude sickness.
76. Etiology and pathogenesis of hemic hypoxia.
77. Etiology and pathogenesis of circulatory hypoxia
78. Etiology and pathogenesis of histotoxic hypoxia.
79. Hyperoxia as a cause of hypoxia. Hyperoxygenation, therapeutic and pathological effects.
80. Urgent and long-term compensation mechanisms for hypoxia.

### **QUESTIONS FOR PRACTICAL LESSON No. 11**

#### **TOPIC "PATHOPHYSIOLOGY OF ACID-BASE STATE"**

1. The concept of acid-base state: the definition of the concept, the role in the body, the mechanisms of regulation, the main indicators.
2. Acidosis, classification.
3. Etiology, compensation mechanisms, clinical and laboratory manifestations of gas acidosis.
4. Etiology, compensation mechanisms, clinical and laboratory manifestations of non-gaseous acidosis
5. Alkaloses, classification.
6. Etiology, compensation mechanisms, clinical and laboratory manifestations of gas alkalosis.
7. Etiology, compensation mechanisms, clinical and laboratory manifestations of non-gaseous alkalosis.
8. Causes of acid-base disorder in dental practice.

### **QUESTIONS FOR PRACTICAL LESSON No. 12**

#### **THE TOPIC IS "VIOLATION OF THE WATER-ELECTROLYTE BALANCE. TYPES, CAUSES, PATHOGENETIC FEATURES"**

1. The balance of water in the body, the mechanisms of regulation of water metabolism.
2. Distribution of water and electrolytes by sectors. Classification of water balance disorders.
3. Hypohydration (hypertensive, isotonic, hypotonic): definition, classification, etiology, pathogenesis, manifestations, compensation mechanisms.
4. Hyperhydration (hypertensive, isotonic, hypotonic): definition, classification, etiology, pathogenesis, manifestations, compensation mechanisms.
5. Pathogenesis of hyper- and hypohydration manifestations in the organs of the oral cavity and maxillofacial region.
6. Edema: definition, classification, mechanisms of development.
7. Pathogenesis of edema in heart failure.
8. Pathogenesis of edema in nephrotic syndrome.
9. Pathogenesis of inflammatory, starvation and hepatic edema.
10. Impaired sodium metabolism: etiology, pathogenesis, manifestations.
11. Potassium metabolism disorder: etiology, pathogenesis, manifestations.
12. The role of metabolic disorders of calcium, magnesium and phosphorus in the development of dental diseases: etiology, pathogenesis, manifestations.

### **QUESTIONS FOR PRACTICAL LESSON No. 13**

#### **TOPIC "PATHOPHYSIOLOGY OF CARBOHYDRATE METABOLISM: HYPOGLYCEMIA, HYPERGLYCEMIA. DIABETES MELLITUS AND ITS COMPLICATIONS"**

1. Hyperglycemia: definitions, types, mechanisms of development, significance for the body.
2. Hypoglycemia: definition of the concept, types, mechanisms of development, significance for the body.
3. Diabetes mellitus: definition, classification, criteria.
4. Regulation of carbohydrate metabolism: insulin, counterinsular hormones, mechanism of action.
5. Insulin-dependent diabetes mellitus: etiology, pathogenesis, clinical manifestations.
6. Insulin-dependent diabetes mellitus: etiology, pathogenesis, clinical manifestations.
7. Diabetes mellitus: principles of prevention and therapy. The pathogenesis of manifestations in the organs of the oral cavity and maxillofacial region in diabetes mellitus.
8. Diabetic comas: ketoacidotic, hyperosmolar, lactic acidemic. Etiology, pathogenesis, manifestations.
9. Late complications of diabetes mellitus: microangiopathy, macroangiopathy, retinopathy, neuropathy, nephropathy.

### **QUESTIONS FOR PRACTICAL LESSON No. 14**

#### **THE TOPIC IS "PATHOPHYSIOLOGY OF TUMOR GROWTH. CARCINOGENS, CARCINOGENESIS, TUMOR ATYPISM"**

1. Tumor growth: definition of the concept. Tumor as a hyperbiotic process. Benign and malignant tumors.
2. Etiology of tumors: physical, chemical, biological carcinogens. Predisposing factors for the occurrence of tumor diseases.
3. Features of the etiology of tumors of the oral cavity and maxillofacial region.
4. The role of epigenetic changes in the development of malignant neoplasms.
5. The stage of initiation in carcinogenesis. The concept of proto-oncogenes, anti-oncogenes and their products.
6. The stage of promotion in carcinogenesis. Tumor atypism and its types.
7. The stage of tumor progression: mechanisms and consequences.
8. Mechanisms and ways of metastasis.
9. Antitumor resistance of the body: immune and non-immune factors

### **QUESTIONS FOR PRACTICAL LESSON No. 15**

#### **FINAL TEST CONTROL**

### **QUESTIONS FOR PRACTICAL LESSON No. 16**

#### **DISCUSSION OF THE RESULTS OF INDEPENDENT WORK**