Plan of practical classes in Microbiology, Virology, Immunology
Specialty "Dentistry"
2025-2026 academic year, 4th semester

Academic training: from February, 9th to June, 12th.

April 21; May 1 are holidays. Classes are not scheduled for these days, but are shifted a week later (provided there are enough school weeks)

Section "Special Medical Microbiology" *(contd)*	
PRACTICAL CLASS 1	**Date: 09.02.26 – 13.02.26**
TOPIC: Methods of microbiological diagnosis of diphtheria and whooping cough.	
Corynebacterium, general characteristics, classification. Corynebacterium diphtheria, properties, pathogenicity factors, toxigenicity, biovars, sensitivity to environmental factors. Diphtheria, prevalence, pathogenesis, toxinemia, manifestations in the oral cavity, immunity, microbiological diagnostics, immunoprophylaxis. Medicines for immuno- and chemotherapy for diphtheria. Bordetella. The causative agent of whooping cough, properties, antigenic structure, sensitivity to environmental factors, pathogenicity factors, differentiation with the parapertussis agent. Pathogenesis, immunity, principles of microbiological diagnostics of bordetella infections. Immunization.	

PRACTICAL CLASS 2	**Date: 16.02.26 – 20.02.26**
TOPIC: Methods of microbiological diagnostics of diseases caused by actinomycetes and mycobacteria.	
Actinomycetes, systematic position, general characteristics, prevalence, role in the pathology of the oral cavity. Etiology, pathogenesis, principles of microbiological diagnostics of actinomycosis of the head and neck tissues. Mycobacteria, general characteristics, resistance to acids. The causative agents of tuberculosis, species composition, morphology, nutritional needs, pathogenicity factors, differences from non-tuberculosis mycobacteria. The pathogenesis of tuberculosis, infectious granuloma, immunity, allergy, anergy. Principles of microbiological diagnostics of tuberculosis, immunoprophylaxis. TB chemotherapeutic drugs.	

PRACTICAL CLASS 3	**Date: 23.02.26 – 27.02.26**
TOPIC: Methods of microbiological diagnostics of anaerobic infections.	
Ecological Group of anaerobic bacteria. Sensitive to oxygen and aerotolerant anaerobes. Sporogenous and asporogenous anaerobes. Gram-positive and Gram-negative anaerobes. Clostridium, general characteristics, classification, sporulation. *Clostridium tetani*, properties. Tetanus exotoxin. Pathogenesis of tetanus, immunity, passive and active immunoprophylaxis, immunotherapy. Clostridia of anaerobic gas infections, properties, toxins. The pathogenesis of gas gangrene, medicines for immunization and serotherapy. *Clostridium botulinum*, properties. Botulinum toxin, mechanism of action. Food botulism, epidemiology, principles of immunotherapy. Asporogenous gram-negative and gram-positive anaerobes. Bacteroides, fusobacteria, peptococci, peptostreptococci, veillonella, characteristics, role in human pathology.	

PRACTICAL CLASS 4	**Date: 02.03.26 – 06.03.26**
TOPIC: Methods of microbiological diagnostics of diseases caused by spirochetes, rickettsia, chlamydia, mycoplasmas.	
Spirochetes, systematic position, general characteristics, classification, role in the pathology of the oral cavity. Treponema, general characteristics, classification. *Treponema pallidum*, morphology, tinctorial properties, antigenic structure, pathogenicity factors. The pathogenesis of syphilis, the principles of microbiological diagnostics in different periods of the disease, manifestations in the oral cavity. Leptospira. Saprophytic and parasitic leptospira. Properties, pathogenicity factors. Leptospirosis, prevalence and pathogenesis. Borrelia, properties, antigenic structure. Etiology and pathogenesis of epidemic relapsing fever. Etiology and pathogenesis of Lyme borreliosis. Rickettsiae, general characteristics, role in human pathology. Chlamydia, systematic position, classification, general characteristics, life cycle, elementary and reticular bodies	

morphology, role in human pathology.

Mycoplasma, systematic position, classification, general characteristics. Mycoplasmas and ureaplasmas role in human pathology.

PRACTICAL CLASS 5 **Date: 09.03.26 – 13.03.26**

TOPIC: Methods of microbiological diagnostics of cholera, plague, tularemia, brucellosis, anthrax. Concluding class on the section: «Special medical microbiology»

Pathogens of especially dangerous and highly contagious infections

Classification of microorganisms and poisons of biological origin according to the degree of hazard. Anti-epidemic regime when working with pathogens of risk groups IV-III. Especially dangerous infections, features of microbiological diagnostics.

Vibrio, general characteristics, classification. *Vibrio cholerae*, properties, antigenic structure, serotypes, pathogenicity factors. Cholera, prevalence, pathogenesis, immunization.

Brucella, general characteristics, classification, properties. Human brucellosis, pathogenesis, immunity, immunization.

The causative agent of plague, systematic position, general characteristics, pathogenicity factors. Pathogenesis, clinical forms, immunity, methods of microbiological diagnostics of plague. Immunoprophylaxis of plague.

The causative agent of tularemia, general characteristics, pathogenicity factors. Pathogenesis, immunity. Live tularemia vaccine (B.Ya.Elbert, N.A.Gaysky).

Bacilli, the systematic position, classification. *Bacillus anthracis*, properties, pathogenicity factors. Anthrax in humans, pathogenesis, prevalence, immunoprophylaxis, manifestations in the oral cavity.

Question for the section: «Special medical microbiology»

1. Staphylococci, classification, general characteristics. Staphylococcal infections, pathogenesis and immunity. Role in in oral cavity pathology. Microbiological diagnosis. Principles of staphylococcal infections treatment and prevention.
2. Streptococci, classification, general characteristics, antigenic structure. Acute and chronic streptococcal infections. Oral streptococci. The role of streptococci in oral pathology. Methods of streptococcal infections diagnostics. Principles of therapy and prophylaxis.
3. Classification of Neisseria. Meningococcus, general characteristics. Meningococcal infections, mechanisms of pathogenesis, immunity, methods of diagnosis, prevention.
4. Gonococci, general characteristics. Mechanisms of pathogenesis and immunity. Microbiological diagnosis of acute and chronic gonorrhea. Principles of therapy and prophylaxis. Gonorrheal stomatitis.
5. General characteristics of the family. Enterobacteriaceae.
6. General Principles of acute intestinal infections (AII) bacteriological diagnosis. E. coli, common characteristic. The biological role of *Escherichia coli*. Diseases caused by Escherichia.
7. Salmonella. General characteristics. Members of the genus. Diseases caused by Salmonella.
8. Pathogens of typhoid, paratyphoid A and B, general characteristic. Pathogenesis, immunity, prophylaxis and methods of microbiological diagnosis of typhoid and paratyphoid.
9. The etiology of bacterial origin food poisoning and intoxication. Materials and methods of diagnosis.
10. Shigella. Classification. Characteristics. Pathogenesis, immunity of dysentery.
11. Klebsiella, general characteristics. Role in human pathology. Methods of klebsiellosis microbiological diagnostics.
12. *Pseudomonas aeruginosa*, general characteristics, pathogenicity factors. Role in human pathology.
13. *C.diphtheria*, general characteristics. Pathogenesis of diphtheria. Manifestation of diphtheria in oral cavity. Immunity in diphtheria. Methods of microbiological diagnostics, principles of diphtheria therapy and prevention.
14. The causative agent of whooping cough, general characteristics. Differentiation with parapertussis agent. Pathogenesis, immunity. Microbiological diagnosis, principles of pertussis treatment and prevention.
15. Actinomycetes, general characteristics. Role in the oral cavity pathology. Actinomycosis, characteristic of pathogen diagnostic techniques.
16. Classification of Mycobacteria. General characteristics of the tuberculosis causative agents. Pathogenesis, immunity, diagnostic, principles of tuberculosis therapy and prophylaxis. Manifestations of tuberculosis in the oral cavity.
17. Classification and general characteristics of anaerobes. Clostridia. Nonspore anaerobes. Role in the oral cavity pathology.
18. The causative agent of tetanus, general characteristics. Pathogenesis, immunity, principles of tetanus treatment and prevention. Gas gangrene pathogens, general characteristics. Pathogenesis, principles of gas gangrene treatment and prevention.
19. The causative agent of botulism, general characteristic. Pathogenesis, principles of botulism prevention and therapy.
20. Methods of anaerobic infections diagnosis.
21. Classification and general characteristics of spirochetes. Borreliosis and leptospirosis agents.
22. Classification of treponemes and treponemal diseases. Characteristics of syphilis causative agent. Pathogenesis, immunity, principles of syphilis therapy and prophylaxis, manifestations in the oral cavity. Methods of syphilis diagnosis.
23. Oral spirochetes. Fusospirochaetosis.
24. Rickettsia. Role in human pathology. Pathogenesis, immunity, methods of typhus diagnosis.
25. Chlamydia. Role in human pathology. Pathogenesis, immunity, methods of diagnosis.
26. Mycoplasma. Role in human pathology. Pathogenesis, immunity, methods of diagnosis.
27. Quarantine diseases: characteristics, classification. Principles of collection, transportation and investigation of specimens with pathogens of 3d and 4th biosafety levels.
28. Vibrio: classification, characteristics, antigenic structure, pathogenicity factors. Cholera: pathogenesis, immunity, microbiological diagnosis, prophylaxis.

29. Classification and characteristics of causative agents of plague, pathogenicity factors, microbiological diagnosis, prophylaxis.
30. Classification and characteristics of causative agents of tularemia, pathogenicity factors, microbiological diagnosis, prophylaxis.
31. Classification and characteristics of causative agents of anthrax, pathogenicity factors, microbiological diagnosis, prophylaxis.
32. Classification and characteristics of causative agents of brucellosis, pathogenicity factors, microbiological diagnosis, prophylaxis.

Practical skills:

1. Determine the morphology of Staphylococcus, pure culture, Gram stain.
2. Determine the morphology of Streptococcus, pure culture, Gram stain.
3. Determine the morphology of Gonococci in pus, Gram stain.
4. Determine the morphology of Enterobacteria, pure culture, Gram stain.
5. Determine the morphology of the mixture of S.aureus and Escherichia coli, Gram stain.
6. Determine the morphology of B.anthracis, pure culture, Gram stain.
7. Determine the morphology Vibrio, pure culture, Gram stain.
8. Determine the morphology of Brucella, a pure culture, Gram stain.
9. Determine the morphology Corynebacteria, pure culture, Leffler stain.
10. Determine the morphology of Klebsiella, pure culture, Hins-Burri stain.
11. Determine the morphology of Mycobacteria in sputum, Ziehl-Neelsen stain.

Section "General and special virology"

PRACTICAL CLASS 6 **Date: 16.03.26 – 20.03.26**

TOPIC: Methods of virological research. Bacteriophages.

General Virology. History of viruses discovery. Objectives of Medical Virology, its relationship with other sciences, the value in the professional activities of a stomatologist. Virosphere. Viruses as an independent form of organic matter existence. The main features that distinguish viruses from other forms of organic matter. Classification of viruses. Prions. Viroids.

The morphology of viruses. Forms of viruses' existence. Morphology of virions of simple (non-enveloped) and complex (enveloped) viruses. Chemical composition of viruses.

The reproduction of viruses. Strict parasitism and cytotropism of viruses. Stages of viruses reproduction: adsorption, cell entry, deproteinization, the synthesis of early and late proteins, multiple replication of the genome, assembly of the virions, the release of virions from the cell. Abortive and lytic infection. Integrative infection of cells.

Viruses of bacteria (bacteriophages). The morphology of the phages, properties. Virulent and temperate phages, and the characteristics of their interaction with bacteria. Lysogenic infection. The use of bacteriophages for the diagnostics, treatment and prevention of bacterial infections.

Viral diseases. Viruses as a cause of cancer and infectious diseases. Prevalence of virus infections. The types of viral infections. Mechanisms of viral damage of cells and organism. Cytopathic and cytotoxic action of viruses. Immune-mediated damage of infected cells. Immunotropic, tolerogenic, tumorigenic, teratogenic virus effect. The persistence of virus in the host. The concept of slow infections of viral and prion origin, features of the pathogenesis.

Antiviral immunity. Factors of innate antiviral immunity. Antiviral inhibitors. Natural killer cells. Interferons, types, classes, properties. Antiviral, anti-tumor, immunomodulatory effects.

Acquired immunity to viral infections. Mechanisms of neutralization of virion infectivity by antibodies. The cytotoxic effects of lymphocytes in virus infected cells.

Chemotherapy and chemoprophylaxis of viral infections.

Immunoprophylaxis and immunotherapy of viral infections.

Virological methods. The study of viruses' morphology. Methods for the isolation, indication and identification of viruses in chicken embryo. Cell culture. Methods for the isolation, indication and identification of viruses in cell cultures. Cultivation of virus in laboratory animals. Serological diagnostics of viral infections. Neutralization (of virus activity) test. Hemagglutination inhibition test. Rapid diagnostic methods: immunofluorescence, enzyme immunoassay and lateral flow (immunochromatography) test. Methods of molecular genetic analysis (molecular hybridization, PCR).

PRACTICAL CLASS 7 **Date: 23.03.26 – 27.03.26**

TOPIC: Methods of virological diagnosis of diseases caused by orthomyxoviruses, paramyxoviruses. Coronaviruses.

Orthomyxoviruses, characteristics, classification. Influenza viruses A and B, the structure of the virion, properties, antigenic structure, serotypes, antigenic variability and its consequences. Influenza, prevalence, pathogenesis, immunity, virological diagnostic methods. Medicines for specific therapy, immune- and chemoprophylaxis of influenza.

Registration of the hemagglutination inhibition test for seroidentification of influenza viruses and serodiagnosis

of viral infection.

Paramyxoviruses, characteristics, classification. Parainfluenza viruses, structure, properties, serotypes. Pathogenesis, immunity. Mumps virus, structure, properties. Pathogenesis, immunity, specific prevention of mumps. Measles virus, structure, properties. Measles, prevalence, pathogenesis, immunity, medicines for active and passive immunization.

Coronaviruses. Classification and role in human pathology, virion structure, properties. SARS and MERS viruses.

SARS-Cov2 virus. COVID-19, pathogenesis, influence on the immune status, laboratory diagnostics, specific prevention.

PRACTICAL CLASS 8 **Date: 30.03.26 – 03.04.26**

TOPIC: Methods of virological diagnosis of enteroviral diseases. Rubella virus.

Picornaviruses. Characteristics of the family, importance for human pathology. Etiology, pathogenesis, immunity, diagnostics and immunoprophylaxis of poliomyelitis. Coxsackieviruses and ECHOviruses. Stomatitis in diseases caused by RNA-viruses.

Rubella virus. General characteristics. Role in pathology. Manifestations of rubella in the maxillofacial region. Prevention of rubella.

PRACTICAL CLASS 9 **Date: 06.04.26 – 10.04.26**

TOPIC: Methods of virological diagnostics of viral hepatitis.

Hepatitis viruses. Classification (HAV, HBV, HCV, HDV, HEV).

Hepatitis A virus, structure and properties. Prevalence, rout of infection, pathogenesis, immunity, diagnostics, specific and nonspecific prophylaxis.

Hepatitis B virus, morphological and antigenic structure, tumorigenicity. Pathogenesis of hepatitis B, immunity, diagnostics, specific and nonspecific prophylaxis. Hepatitis D virus. Delta infection, pathogenesis.

Hepatitis C, E viruses, characteristics.

PRACTICAL CLASS 10 **Date: 13.04.26 – 17.04.26**

TOPIC: Methods of virological diagnostics of HIV infection. Rabies virus.

Retroviruses, characteristics, classification. Human immunodeficiency virus (HIV-1, HIV-2), virion morphology, genome, antigenic structure, propagation in T-lymphocytes, sensivity to physical and chemical factors. HIV infection, prevalence, transmission, groups at high risk of infection. Development of immunodeficiency and its characteristics. Pre-AIDS and its manifestations. AIDS. AIDS-associated opportunistic infections and tumors. Diagnosis of HIV infection, causal treatment. Prevention of AIDS and its complications.

Rhabdoviridae, characteristics, family composition. Rabies virus properties. Rout of human infection, pathogenesis, virological diagnostics. L. Pasteur role in the development of vaccines. Modern anti-rabies vaccine and gamma globulin to prevent rabies, indications for use.

PRACTICAL CLASS 11 **Date: 20.04.26 – 24.04.26**

TOPIC: Methods of virological diagnostics of herpetic and adenoviral diseases of the oral cavity. Human papillomavirus. Concluding class on the section «General and specific medical virology»

Herpesviruses, characteristics, composition of the family, resistance to physical and chemical factors, oncogenic properties.

Human herpes viruses:

alpha herpesviruses. Herpes simplex viruses 1 and 2 (HHV-1, HHV-2), properties. Pathogenesis of herpetic infections, immunity, virusological diagnostics, chemotherapy. Varicella-zoster virus (HHV-3), properties. Pathogenesis, immunity, diagnosis, prevention of varicella. Etiology and pathogenesis of herpes zoster;

beta-herpesviruses. Cytomegalovirus (HHV-5), properties. Main forms of the infection. Human herpes viruses of 6, 7 serotypes and their role in human pathology (roseola infantum, chronic fatigue syndrome);

gamma-herpesviruses. Epstein-Barr virus (HHV-4) properties. Pathogenesis, immunity, diagnosis of infectious mononucleosis. HHV-8, role in human pathology (Kaposi's sarcoma).

Adenovirus, characteristics, family composition, tumorigenicity. Human adenoviruses, virion structure, properties, serotypes. Pathogenesis, immunity.

Papillomaviruses: characteristics, role in pathology, manifestations in the oral cavity, disease prevention.

Question for the section «General and specific medical virology»

1. Virology, tasks and methodologies. The systematic position and classification of viruses.
2. Forms of viruses existence. The morphology of virions. The interaction of viruses with susceptible cells.
3. Features of infection and immunity in viral infections.
4. Methods of virus cultivation (cell culture, chicken embryo, laboratory animals).
5. General principles of viral infections diagnostics.

6. Influenza viruses. General characteristics. Pathogenesis, specific and non-specific treatment and prevention, influenza laboratory diagnosis. Manifestations in the oral cavity.
7. Paramyxoviruses, general characteristics. Mumps virus, respiratory-syncytial virus, measles virus, parainfluenza viruses. Manifestations in the oral cavity.
8. Coronaviruses: classification, characteristics. Coronavirus infection COVID-19: pathogenesis, immunity, etiological diagnosis, prevention.
9. Enteroviruses, general characteristics, role in human pathology. Poliovirus, pathogenesis and laboratory diagnostics, specific prevention. Manifestations of enteroviruses infection in oral cavity.
10. Classification of hepatitis viruses. Characterization of hepatitis A, B, C virus. Pathogenesis, immunity, laboratory diagnosis, prevention.
11. Retroviruses. Human immunodeficiency virus (HIV-1, HIV-2). Pathogenesis. AIDS-associated diseases in dentistry. HIV diagnostics, prophylaxis.
12. Adenoviruses, general characteristics. Pathogenesis, laboratory diagnostics of adenoviral infections. Manifestations in oral cavity.
13. Herpes viruses. Classification. General characteristics, disease. Herpetic stomatitis.
14. Bacterial viruses (bacteriophages), properties, classification. The practical use of bacteriophages.

Section"Microbiology and immunology of the oral cavity"

PRACTICAL CLASS 12 **Date: 27.04.26 – 30.04.26**

TOPIC: Dental microbiology. Methods of studying normal microflora. Microbiology of caries.

Oral microflora. Autochthonous, allochthonous oral microflora. The composition of autochthonous microflora. Gram-positive and Gram-negative cocci: oral and other streptococci, properties, pathogenetic significance; staphylococci, veilonella, neisseria. Gram-positive and Gram-negative bacilli (lactobacilli, propionibacteria, actinomycetes, aktinobacilli, bacteroides, prevotella, fuzobacteria, leptotrichia), their pathogenic significance. Curved form: vibrio, spirochetes. Mycoplasma, fungi, protozoa.

The ontogeny of the normal microflora. Composition of the microflora of the mouth in the first hours after birth, before and after the appearance of the teeth and in elderly persons.

Microbial flora of specific areas of the mouth. Microflora of saliva, composition, quantitative characteristics of various species. Composition of the microflora of the tongue and soft tissues. The mechanisms of microorganisms adhesion.

Microflora of dental plaque. Microorganisms-colonizers, quantitative ratio at different stages of plaque formation. Dental plaque as a biofilm. The role of quorum sensing factors in plaque formation. New approaches to reduce the bioburden of dental plaque.

The microflora of the periodontal pocket. Qualitative and quantitative composition.

The influence of genetic and non-genetic factors on the microflora of the mouth. Influence of environmental factors and physiological features of the oral cavity of the host on the microflora of the biotope.

The role of saliva, the presence or absence of teeth, removable and non-removable prosthesis, defects and anomalies of the teeth-jaw system, the diet, bad habits, hygiene of the oral cavity in the oral microflora condition.

Value of the normal oral flora - positive and negative. Normal microflora as a potential reservoir of infection. Dysbiosis of the oral cavity.

Methods for the study of oral microflora in the norm and pathology.

Caries, definition, prevalence, etiology. Criteria of microbial cariogenicity. Cariogenic streptococci. Characteristics of *Streptococcus mutans* and *S.sobrinus*. Characteristics of Lactobacilli. Accessory microbes, role in caries development. Pathogenesis of dental caries: adhesion mechanisms (carbohydrate-dependent and independent) of streptococci and dental tissue destruction mechanisms. Streptococci role in co-aggregation. Glucans. Conditions for the development of caries. Caries resistance. Nonspecific and specific prevention of dental caries. Fluorides and their influence on oral microbes.

PRACTICAL CLASS 13 **Date: 04.05.26 – 08.05.26**

TOPIC: Dental microbiology. Methods of studying oral immunity factors.

Immune mechanisms in the oral cavity

Nonspecific protection factors. Protective mechanisms of saliva: mineralization. mechanical and detoxification functions, antimicrobial factors of saliva (lysozyme, beta-lysine, lactoperoxidase, sialin, proteins of the complement system, interferons and viral inhibitors), the aggregation function of saliva, role in reducing of the virulence and calcification microbes, saliva enzymes. Role of leukocytes and natural antibodies. Protective mechanisms of the mucous membranes: mucous barrier properties, mechanical removal of microorganisms, phagocytosis. Protective mechanisms of gingival fluid, composition, the bactericidal properties of gingival fluid, phagocytosis. The protective role and properties of the tooth enamel. Defense mechanisms of the normal microflora.

Specific protective factors. The role of antibodies and T lymphocytes in protection against infection. Humoral immune response. Local immunity of the oral cavity. Function of secretory immunoglobulin A. Cellular immune response and its manifestations in the oral cavity.

Registration of the radial immunodiffusion reaction according by Mancini to determine the concentration of secretory immunoglobulin A in saliva.

Immunopathological processes in the oral cavity. Allergic and autoimmune reactions, role in the etiology and pathogenesis of stomatitis of various etiology. The role of immunodeficiency states.

Section "Clinical stomatological microbiology"

PRACTICAL CLASS 14 **Date: 11.05.26 – 15.05.26**

TOPIC: Microbiology of periodontitis and periimplantitis

Pulp and its protective role. Routs of pulp infection. Microbes species and their role in initiation and pathogenesis of pulpitis, acute and chronic apical periodontitis, periostitis, osteomyelitis, abscess and phlegmon of the soft tissue.

Microflora in inflammatory processes in the oral cavity. Odontogenic inflammation: etiology, types and phases of the inflammation. Importance in the pathology of the chronic odontogenic infection.

Diseases of periodontium: classification, risk factors.

The role of the dental plaque in periodontitis development. The role of microorganisms in dental calculus development. Pathogenetic importance of the dental calculus.

The role of microorganisms in the etiology and pathogenesis of gingivitis. Etiology and pathogenesis of catarrhal and ulcerative gingivitis, the role of microorganisms. Etiology and pathogenesis of marginal periodontitis, the role of microorganisms and their metabolic products. Juvenile periodontitis.

General properties of periodontopathogenic microorganisms. Red complex microorganisms: Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola. Characteristics, pathogenicity factors, their role in the pathogenesis of periodontitis.

Microorganisms of orange, green and yellow complexes, their role in the development of periodontal diseases. Characteristics of Aggregatibacter actinomycetemcomitans, pathogenicity factors, mechanism of invasion and persistence, role in the development of periodontitis.

Immune mechanisms in periodontal diseases. Factors contributing to the invasion of microorganisms. Mechanisms of tissue protection from microbial invasion. Principles of prevention and treatment of periodontitis.

Immunological aspects of the relationship between inflammatory periodontal diseases, cardiovascular and rheumatic diseases

The microflora dynamics in the case of successful and complicated implantation.

PRACTICAL CLASS 15 **Date: 18.05.26 – 22.05.26**

TOPIC: Methods of microbiological diagnostics of stomatitis. Methods of microbiological diagnostics of oral mycoses.

Lesions of the oral mucosa and maxillofacial area with specific bacterial infections (actinomycosis, tuberculosis, leprosy, syphilis, scarlet fever, diphtheria, typhoid fever, anthrax, gonorrhea). Etiological role of microorganisms, pathogenesis, microbiological diagnostics, prevention.

Fusospirochetosis, etiology, pathogenesis, complications of fusospirochetosis, microbiological diagnostics.

Viral stomatitis. Etiology and pathogenesis of acute and recurrent herpetic stomatitis. Stomatitis in influenza, parainfluenza, measles, mumps, adenovirus infection, rubella, chickenpox, infectious mononucleosis. Enteroviral stomatitis. Stomatitis in HIV infection.

Erythema exudativum multiforme and chronic recurrent aphthous stomatitis, the role of microorganisms, immunopathological mechanisms.

Fungi. Systematic position and classification of fungi. Human pathogenic fungi, morphology, biology, pathogenicity factors. *Candida albicans*. Oral candidiasis: candida glossitis, cheilitis, gingivitis, stomatitis (thrush), pathogens, factors contributing to development, clinical manifestations in HIV infection and AIDS. Blastomycosis, histoplasmosis. Microbiological diagnosis of fungal stomatitis. Detection and determination of Candida morphology smears, stained by the Gram method.

PRACTICAL CLASS 16 **Date: 25.05.26 – 29.05.26**

TOPIC: Methods of microbiological diagnostics of odontogenic inflammatory diseases of the maxillofacial region and stomatogenic infections.

Opportunistic infections in dentistry, prevalence, conditions for the development, manifestations, methods of microbiological diagnostics. Opportunistic microbes, systematic position, differences from non-pathogenic microbes. Criteria for assessing the etiological significance of microbes isolated from pathological focus.

PRACTICAL CLASS 17 **Date: 01.06.26 – 05.06.26**

TOPIC: Methods of microbiological diagnostics of stomatogenic bronchopulmonary infections

Etiology and pathogenesis of septic stomatogenic infections (bacteremia, sepsis, bacterial shock, inflammatory diseases of the skin, subcutaneous tissue and soft tissue of the maxillofacial region). Microbiological diagnostics.

Etiology, pathogenesis, microbiological diagnostics of stomatogenic bronchopulmonary diseases.

PRACTICAL CLASS 18 **Date: 08.06.26 – 12.06.26**

TOPIC: Hospital-acquired infections in dental practice. Concluding class on the section «Clinical dental microbiology»

Health care-associated infections (HCAI) in dental practice, distribution, socio-economic consequences, etiological structure. Hospital ecovars and strains of HCAI pathogens. Obligate pathogenic microorganisms are the causative agents of HCAIs. Exogenous and endogenous conditionally pathogenic microorganisms - causative agents of HCAIs. Conditions for development, principles of microbiological diagnosis and prevention of HCAIs. Microbiological monitoring. Infection control. Anti-epidemic regime in dental organizations.

Question for the section «Clinical dental microbiology»

1. The microflora of the oral cavity (indigenous, transient). Ontogeny of normal oral flora.
2. Representatives of the normal oral flora: Gram-positive and Gram -negative cocci (streptococci, peptostreptococci, staphylococci, veillonella, Neisseria), their role.
3. Representatives of the normal oral flora: Gram-positive (propionjbacterium, lactobacillus, actinomyces, corynebacterium) and Gram-negative rods (bacteroides, prevotella, porphyromonas, fusobacterium, leptotrichia), their role.
4. Representatives of the normal oral flora spiralshaped bacteria (vibrio, wolinella, centipedia, selenomonas, campylobacter, spirochetes), mycoplasma, protozoa, fungi, and their role.
5. Microflora of specific areas of the mouth: saliva, dorsum of the tongue, dental pocket, mucous membranes. Methods of study of oral microflora.
6. Influence of environmental factors and physiological features on oral flora. The role of the oral cavity normal microflora (positive and negative). Disbacteriosis of the oral cavity: causes, outcome, prevention, principles of correction.
7. Antigens and the immune system of the oral cavity. Citrullinated antigens. Immune mechanisms in the oral cavity. Antimicrobial factors of saliva: defensins, cathelicidin, mucins, histatin, statherin, cystatins. Proinflammatory cytokines.
8. Nonspecific mechanisms of defense of the mucous membranes, saliva, gingival fluid, tooth enamel, normal microflora's.
9. Factors and mechanisms of acquired immunity of oral cavity. Local Immunity of the oral cavity. Immunological aspects of relationship of inflammatory periodontal diseases, cardiovascular and rheumatic diseases.
10. Types of inflammatory processes of the oral cavity, their characteristics. Cytokines of early and late phase of inflammation: cell producers, properties. Methods of cytokines detection: obtaining of specimens, storage, methods of determination (ELISA, genetic).
11. The etiology of dental caries. Features of cariogenic microorganisms. Cariogenic streptococci. Characteristics of S.mutans. Characteristics of lactobacilli. Associative (additional) microorganisms. The role of the microorganism in the development of caries.
12. Cariogenesis: mechanisms of streptococci adhesion to teeth and their role in dental plaque formation. Role of glucans and their characteristics. Factors responsible for caries development. Resistance to caries. Prevention of dental caries.
13. Odontogenic infections: etiology, types. The role of microorganisms in the etiology and pathogenesis of gingivitis. Dynamics of the microflora of implants in case of successful implantation and complicated.
14. The role of microorganisms in the pathogenesis of pulpitis, acute and chronic periodontitis ray, periostitis, osteomyelitis, abscesses and soft tissue abscesses.
15. Periodontal diseases: classification, risk factors. General properties of periodontopathogenic microorganisms. Red complex microorganisms: Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola. Characterization, pathogenicity factors and their role in the pathogenesis of periodontitis. Characteristics of Aggregatibacter actinomycetemcomitans and role in the development of aggressive periodontitis.
16. Dental Plaque: microflora, formation stages. The role of dental plaque in the development of periodontitis. Microorganisms of orange and yellow complexes, their role in the development of periodontal disease. Plaque as a biofilm. The role of quorum sensing factors in the formation of plaque. New approaches to reduce the bioburden of plaque.
17. Immune mechanisms in the development of periodontal diseases. Factors contributinging invasion of microorganisms. Mechanisms to protect tissues from microbial invasion. Principles of prevention and treatment of periodontitis
18. The role of microorganisms in the formation of dental calculus. Pathogenesis of the carie dental calculus formation.
19. Inflammatory diseases of the oral mucosa: classification, the role of microorganisms in their development. Specific and nonspecific stomatitis.
20. Stomatitis caused by obligate pathogens and opportunistic bacteria.
21. Fusospirochetal diseases: etiology, characteristics of pathogens, pathogenesis, clinical forms.
22. Actinomyces spp.: systematics, classification, characteristics, antigenic structure, factors of pathogeneity. Cervico-maxillo-facial actinomycosis: pathogenesis, immunity, microbiological diagnosis, prevention.
23. Viral stomatitis.
24. Candida: systematics, properties, pathogenicity factors. Candidosis: factors responsible for the developement, methods of diagnosis and prevention.

25. Methods of studying the normal oral flora. Methods of sampling for dental diseases diagnosis.
26. Manifestations of allergic and immunodeficiency conditions in the oral cavity. Recurrent viral aphthous stomatitis

Plans for laboratory classes were reviewed and approved at a meeting of the department on 05.02.2026, protocol No.11

Head of departament  I.A.Gavrilova