

PEDIATRICS

Total credits:

22

Theory credits:

7

Practical credits:

15

GENERAL OBJECTIVES

Students will be expected to acquire sufficient theoretical knowledge and basic practical experience of the most specific aspects of pediatrics, as described in the Pediatrics course programme and summarized in the following sections:

- Knowledge of the normal growth and development process for children under 18 and their physiological variants.
- Knowledge of nutrition in the healthy and ill child during the different stages of infancy and childhood.
- Prophylaxis of infectious diseases. Prevention of the different causes of organic disease. Prevention of situations that affect the physical or psychic development or social integration of children.
- Knowledge of the signs and symptoms of childhood diseases up to the age of 18.
- Acquisition of skills for the diagnosis, prognosis and treatment of the principal changes in the physical, psychic and social state and the health of children up to the age of 18.
- Knowledge of the social changes that influence normal development in children.
- Learn the basic principles of medical ethics applied to professional practice in all areas of child healthcare.

SPECIFIC OBJECTIVES

In addition to the learning objectives described for each topic, by the end of the course students will be expected to have acquired the following skills:

- Obtain a correct anamnesis that includes patient interview and enumeration of the most significant clinical signs.
- Develop the routine of establishing satisfactory communication between doctor, family and patient, which in pediatrics will differ with patient age.
- Evaluate clinical signs recorded in the anamnesis according to importance.
- Know the correct clinical examinations used in the pediatric age groups and highlight aspects that can be considered physiological at a given age.
- Correctly interpret clinical analyses, taking into account changes due to age group.
- Interpret the most basic diagnostic images, such as simple radiography.
- Know the standards for emergency treatment in pediatrics.
- Correctly apply pediatric preventive standards: vaccinations, chemoprophylaxis.

PROGRAMME

GENERALITIES

1. Concept of Pediatrics

Biological, medical, social and psychological characteristics at pediatric age. Basic concepts: puericulture, clinical pediatrics and social pediatrics. Stages of childhood. Principal causes of infant mortality.

Objectives: Understand the concepts of *puericulture*, *clinical pediatrics*, *social pediatrics* and *developmental pediatrics*. Understand the main characteristics of pediatrics: biological, medical, social and psychopedagogical. Know the stages of childhood and the basic aspects of child healthcare demographics.

2. Physiology of growth and sexual development

Concept. Characteristics of the prenatal, prepubescent and pubescent stages. Secular acceleration. Growth recovery. Growth factors. Sexual development: endocrine changes and development of sexual characteristics.

Objectives: Recognition of the particular growth characteristics in the different periods of pediatric age. Evaluation of the teething timetable, bone maturation and sexual maturation. Interpretation of anthropometric data. Define the concept of *growth rate*. Understanding of growth control methods.

3. Psychomotor development

Stages of psychomotor development. Psychic and motor acquisitions in the different pediatric ages. Limits of normality.

Objectives: Know the motor and psychological acquisitions in children, particularly in the infant stage, and their physiological variations. Early detection of a lack of acquisitions and its pathological significance.

4. Principal characteristics of digestion and metabolism in infants

Functional characteristics of digestion: oral, gastric and intestinal function. Metabolic characteristics: energy metabolism, acid-base balance, water metabolism, proteins, carbohydrates, lipids, minerals and vitamins.

Objectives: Knowledge of oral, gastric and intestinal secretions during digestion in infants. Particular characteristics of the different types of metabolism during the first year of life and their effects on nutrition.

5. Healthy infant feeding. Breast-feeding

Breast-feeding: current attitudes. Comparative study of breast milk and cow milk. Advantages and disadvantages of maternal breast-feeding. Bottle-feeding.

Objectives: Physiology of human lactation: secretion and ejection. Highlight the principal characteristics of human milk and their influence on the state of nutrition. Consider the factors that influence the success or failure of breast-feeding.

NEONATOLOGY

6. Normal newborn

Definition. Evaluation of the neonatal state. Growth and developmental characteristics. Morphology. Skin. Nutrition and metabolism. Normal characteristics of the different apparatus and systems. Newborn care: respiration, temperature regulation, umbilical cord, eyes, prophylaxis of hemorrhagic disease. General and skin treatments. Feeding.

Objectives: Understand the concept of *normal newborn* and the different neonatal stages. Distinguish between the normal and pathological newborn. Understand neurological examination of newborns, the immune system and the principal risks during the neonatal period.

7. Premature and low birthweight newborns

Concept. Classification of preterm newborns. Etiology. Physiopathology. Clinical characteristics. Signs of prematurity. Immediate and delayed disorders. Diagnosis. Prognosis (immediate and delayed). Treatment: delivery, feeding, thermoregulation, prevention of infections, respiratory disorders. Characteristics of low birthweight newborns.

Objectives: Establish the concept of *premature newborn* and *low birthweight newborn*. Know the causes of premature birth, the maternal causes of low birth-weight newborns and the clinical and functional characteristics of premature and low birth-weight newborns. Know and prevent the sequelae of prematurity. Know how to inform the family about diagnosis, prognosis and treatment. Know how to carry out the transfer of a premature or high-risk newborn.

8. Newborn asphyxia. Hypoxic-Ischemic Encephalopathy

Concept. Etiology. Clinical requirements: acute fetal distress, early neonatal depression, hypoxic-ischemic encephalopathy, multisystemic disorder. Diagnosis of the grade of cerebral distress. Prognosis. Treatment. Newborn resuscitation.

Objectives: Know the signs of fetal distress. Know how to assess the Apgar test. Know the clinical signs of hypoxia and possible neurological conditions. Description of neonatal resuscitation procedures. Methodology for establishing immediate and delayed prognoses.

9. Fetal and neonatal trauma

Physiological trauma. Pathological trauma: cutaneous, muscular, osteo-cartilaginous and of the central nervous system. Intracranial hemorrhage. Obstetric paralysis: facial, brachial, diaphragmatic. Injury to the internal organs.

Objectives: Know the principal injuries produced by birth trauma in newborns. Recognize the risk factors for the appearance of these injuries. Recognize the types of trauma that require hospital treatment. Establish immediate and delayed prognoses of fetal and neonatal trauma. Know the relevant trauma prophylaxis during the neonatal period.

10. Respiratory difficulty in newborns

Concept and classification. General treatment. Infectious lung diseases: predispositionary factors, agents, clinical requirements. Respiratory distress syndrome: etiopathogeny, clinical requirements, complementary tests, treatment. Pleural effusion. Aspiration syndrome. Air leakage. Congenital lobar emphysema. Diaphragmatic hernia.

Objectives: Know the characteristics of neonatal respiratory function. Describe the principal causes of neonatal lung disease. Differentiate between neonatal respiratory difficulty of pulmonary, cardiac and neurological origin. Know how to carry out and interpret a gasometric analysis. Know how to interpret thoracic radiography in newborns. Distinguish between infectious and non-infectious lung diseases. Know the basis of respiratory therapeutics and the criteria for mechanical ventilation. Diagnose neonatal lung diseases requiring surgical treatment.

11. Fetal-neonatal hemorrhage

Etiopathogeny. Clinical aspects (funicular-placental, fetal and neonatal hemorrhage). Hemorrhagic anemia. Clinical and etiological diagnosis. Prophylaxis. Treatment.

Objectives: Understand the physiology of coagulation in newborns. Know the causes of vitamin K deficiency in newborns. Know the principal hereditary hemorrhagic disorders. Know the causes of neonatal thrombocytopenia. Be able to provide a clinical assessment of the different types of neonatal hemorrhage. Know how to establish prophylaxis in children at risk of neonatal hemorrhage. Know the basic treatment protocols. Know how to provide emergency treatment for acute anemia.

12. Infections in newborns

Etiopathogeny. Localized infections. Generalized infections. Clinical aspects of sepsis. Principal etiological forms. Meningitis: clinical aspects and treatment. Early diagnosis of necrotizing enterocolitis.

Objectives: Know the general clinical characteristics of neonatal infections. Know the most frequent causes of neonatal infection. Know the predispositionary factors. Know how to determine the risks of infection, suspected infection and certain infection. Be able to establish a quick and orientative diagnostic protocol and interpret the laboratory data that suggest or confirm infection. Know the neonatal clinical procedures for sepsis, meningitis and necrotizing enterocolitis. Be able to establish a therapeutic protocol for an infection with an unknown germ.

13. Prenatal infections. Syphilis. Toxoplasmosis. Cytomegalovirus

Congenital syphilis. Clinical aspects. Diagnosis. Treatment. Congenital toxoplasmosis. Clinical aspects. Diagnosis. Prophylaxis. Treatment. Congenital cytomegalovirus. Clinical characteristics. Diagnosis. Treatment. Prophylaxis of the vertical transmission of hepatitis B.

Objectives: Recognition of the clinical signs of the principal prenatal infections. Diagnosis and assessment scheme for serological tests, with particular focus on disease activity. Evolution and possible complications according to the type of prenatal infection. Knowledge of control and treatment during pregnancy. Know the principal therapeutic procedures during the neonatal stage.

14. Hyperbilirubinemia. Hemophilia

Etiopathogenetic classification. Physiological jaundice: concept, pathogeny. Abnormal disease courses. Hemophilia in newborns. Rh isoimmunization. ABO isoimmunization. Biliary atresia. Diagnostic approach to neonatal jaundice. Prophylaxis. Treatment.

Objectives: Understand bilirubin metabolism and its consequences in newborns. Define physiological jaundice and be aware of its possible evolution. Diagnostic approach and monitoring of pathological jaundice. Know how to determine the risk of hyperbilirubinemia in different clinical situations. Know the different causes of hemolytic disease, its clinical evolution and possible complications. Indicate preventive measures and treatment for hemolytic disease.

PRENATAL PATHOLOGY

15. Diagnostic orientation of polymalformation syndromes

General etiopathogeny. Critical periods in embryogenesis. Deformities, malformations, congenital syndromes. Complete care for malformed children and their families.

Objectives: Enumerate and define the developmental morphological disorders. Know the clinical classification and the principal etiopathogenetic groups. Describe the diagnostic guidelines for malformed children. Know the protocols for complete care.

16. Embryo-fetopathies

Classification. General etiology. Clinical procedures for the principal embryo-fetopathies. Therapeutic possibilities.

Objectives: Know the principal teratogenic agents responsible for malformations. Describe the most characteristic symptoms of the principal embryo-fetopathies. Know those embryopathies that are phenocopies of genetic syndromes.

17. Autosomal chromosome abnormalities at pediatric age

Most common autosomal syndromes: Down syndrome, Lejeune syndrome. Other autosomal syndromes. Microdeletion syndromes.

Objectives: Understand the clinical repercussions of chromosomal alterations in children. Describe the clinical procedures for the most frequent autosomal diseases: Down syndrome, Lejeune syndrome.

18. Gonosomal chromosome abnormalities at pediatric age

Clinical procedures for gonosomal aberrations at pediatric age. Most common syndromes: Turner syndrome, Klinefelter syndrome.

Objectives: Know the clinical procedures for the most common heterochromatin diseases in pediatrics. Establish standards for early diagnosis.

19. Counselling in prenatal pathology

Genetic advice: basis, socio-therapeutic implications. Knowledge of the different patterns of inheritance. Basic methodology.

Objectives: Define the term *genetic counselling*. Know the relevant indications. Know the preventive guidelines for cases of genetic pathology in children.

DIGESTIVE PATHOLOGY

20. Acute diarrhea. Salmonellosis

Concept: etiology, enteral and parenteral infection, non-infectious diarrhea. Pathogeny. Clinical study. Diagnosis. Prognosis. Treatment: liquid diet, feeding, etiological treatment. Salmonellosis in children: clinical aspects, diagnosis and treatment.

Objectives: Understand the concepts of *acute diarrhea*, its epidemiology, the etiopathogeny of acute diarrhea in infants and possible complications. Know how to establish the diagnostic approximation and etiological and dietetic treatment of acute diarrhea. Know the pathology for salmonellas at pediatric age.

21. Chronic diarrhea. Giardiasis

Celiac disease: etiopathogeny, clinical aspects, evolution and clinical forms. Complementary tests. Treatment. Carbohydrate intolerance. Types of milk intolerance: concept, types and classification according to predominant age. Lambliasis in children.

Objectives: Know the physiopathological and etiopathogenic classification of chronic diarrhea. Determine the required treatment. Know the epidemiology and clinical aspects of celiac disease. Identify the genetic and predisposition factors of celiac disease. Know the diagnostic criteria for celiac disease. Know how to determine and monitor an appropriate diet for a child of any age with celiac disease. Understand lactose intolerance and how it should be managed. Recognize the pathology, epidemiology and treatment of lamblia.

22. Emetic syndromes

Differential diagnosis of vomiting in newborns: transitory vomiting, vomiting due to extra-digestive processes, vomiting due to congenital anomalies of the alimentary canal. Acute vomiting in infants: of dietary or postural origin, caused by aerophagia, infectious. Chronic functional vomiting in infants (clinical procedures and treatment).

Chronic organic vomiting in infants. hypertrophic pyloric stenosis and insufficiency of the esophageal hiatus (clinical aspects and treatment). Vomiting in older children. Acetonemic vomiting.

Objectives: Define the criteria for *vomiting*, *regurgitation* and *ruminatio*n; establish the differences and the concept of hiatus hernia, its etiopathogeny, clinical procedures and diagnosis. Know the etiopathogenic factors of vomiting in infants, the semiology of vomiting and current diagnostic methods for its assessment. Know the most common causes of vomiting in infants. Establish the diagnostic criteria for functional vomiting. Determine the appropriate therapeutic approach.

23. Acute and chronic abdominal pain

Acute abdominal pain: anamnesis, examination, clinical procedures and complementary tests. Intestinal invagination: clinical aspects and image analysis. Proctorrhagia in children. Acute appendicitis: clinical characteristics and differential diagnosis. Chronic abdominal pain. Etiological factors. Differential diagnosis.

Objectives: Know the semiology of acute abdominal pain. Know the analyses and complementary examinations for the diagnosis of acute abdomen in children. Establish the procedure to follow for a child with acute or chronic abdominal pain.

24. Constipation

Etiopathogeny: congenital, functional and secondary megacolon. Clinical procedures for constipation in children. Diagnosis of constipation. Dietary, pharmacological and psychopedagogical treatment.

Objectives: Define the concept of *constipation*. Discuss the dietary and sociocultural factors that influence constipation. Establish a complete therapeutic programme (dietary, intestinal habit, etc.). Discuss the etiology and pathogeny of Hirschsprung's disease. Know the clinical characteristics of megacolon and establish the differential diagnosis.

RESPIRATORY PATHOLOGY

25. Pathology of the upper respiratory tract

Common cold. Adenoiditis. Sinusitis. Pharyngotonsillitis. Otitis. Epiglottitis. Laryngitis.

Objectives: Understand the concept of the above conditions. Know the epidemiology and principal etiological factors in their appearance. Plan the diagnostic and therapeutic guidelines for a suspected pathology of the upper respiratory tract. Possible prophylaxis measures.

26. Bronchiolitis. Bronchopneumopathies and pneumonia

Etiology. Pathogenic factors. Clinical aspects. Radiology. Clinical, physiopathological, etiopathological and differential diagnosis. Evolution and prognosis. Treatment (etiopathological and pathogenic).

Objectives: Define the concept of *acute respiratory insufficiency* (ARI). Establish the clinical danger signs in infants with ARI. Define the concept and explain the epidemiology and physiopathology of bronchiolitis. Establish the clinical and diagnostic criteria of bronchiolitis. Determine the appropriate treatment. Consider the standard clinical data for acute pneumonia in children. Establish diagnostic criteria for suspected pneumonia and the methods required to identify the pathogen agent. Determine the bases of general treatment for acute pneumonia. Define the most appropriate antibiotic therapy for the above types of pneumonia.

27. Bronchial asthma

Concept. Clinical study: typical paroxysmal symptoms, atypical paroxysmal manifestations, symptomatology of intervals. Diagnosis: clinical, differential, etiopathogenic. Treatment of the acute phase according to seriousness. Therapeutics in the intervals.

Objectives: Define the concept of *pediatric bronchial asthma* and the mechanisms of bronchial hyperreactivity. Know the anamnestic and clinical criteria for distinguishing asthma from other types of non-allergic obstructive bronchitis. Indicate measures of clinical and environmental control for asthmatic children. Determine the series of therapeutic measures and the associated controls and risks. Name the general measures that are important in the treatment of asthma. Know the prophylaxis and prognosis for bronchial asthma.

28. Cystic fibrosis

Concept. Etiopathogeny. Respiratory and digestive clinical aspects. Other clinical manifestations. Complementary diagnostic methods. Treatment: meconial ileum, diarrhea types, respiratory types, therapeutic scheme.

Objectives: Understand the multisystemic concept of *fibrocystic disease of the pancreas*, the incidence, means of transmission and physiopathology of cystic fibrosis. Describe the clinical forms of the disease. Know the indications for carrying out a determination of electrolytes in the sweat. Evaluate the normal and pathological values and the current diagnostic criteria for cystic fibrosis. Establish the general respiratory, digestive and

nutritional cures for the cystic fibrosis patient. Psychological and medical support in the home monitoring of these diseases. Determine the possibilities for lung transplantation.

CARDIOCIRCULATORY PATHOLOGY

29. Diagnostic orientation of congenital cardiopathies

Functional and transitory murmurs in children. Congenital cardiopathies with dominant murmur. Differential diagnosis of cyanosis in pediatrics. Cyanotic congenital cardiopathies. Clinical aspects and etiology of heart failure in children. Congenital cardiopathy with early heart failure.

Objectives: Know the physiological characteristics of the circulatory apparatus in children. Evaluation of the presence of murmur and cyanosis. Diagnostic approach for a suspected congenital cardiopathy. Clinical assessment of heart failure. Current therapeutic possibilities for congenital cardiopathies.

30. Differential diagnosis of cardiomegaly in pediatrics

Cardiomegaly: classification. Primary myocardial disease: etiology and clinical aspects of myocarditis in children; clinical aspects of endocardial fibroelastosis. Classification of secondary myocardopathies or myocardosis. Treatment of myocarditis in children.

Objectives: Know the cardiothoracic indices at different ages. Know the different causes of cardiomegaly in children. Concept of *myocarditis*. Know the principal myocardopathies: etiology, clinical aspects and diagnosis. Know how to determine emergency and maintenance treatment for myocardopathies.

HEMATO-ONCOLOGY

31. Anemia in children

Anemia syndrome. Pseudo-anemia. Ferropenic and megaloblastic anemia: clinical aspects, diagnosis and treatment. Hemolytic anemia: hereditary spherocytosis, thalassemia, enzymopenic hemolytic anemia. Hemolytic uremic syndrome and other acquired hemolytic erythropathies. Congenital aplastic anemia.

Objectives: Know the relevant anamnestic, clinical and analytical data for anemia in children. Determine the classification of anemia based on etiological factors. Determine the clinical etiology, analysis and therapeutics for macrocytic anemias due to deficiency of folates and vitamin B₁₂. Know the most frequent congenital hemolytic disorders in the community and the laboratory findings required to confirm diagnosis. Study the exogenic factors that could incite hemolysis in children with glucose-6-phosphate dehydrogenase deficiency. Study the anamnestic, clinical and therapeutic elements of thalassemia major and minor. Define the concept of *aplastic* and *hypoplastic anemia*. Know the clinical characteristics of Fanconi anemia.

32. Hemorrhages

Hemorrhages due to congenital alterations of the vessels. Acquired vascular conditions. Hemorrhages due to alterations of the platelets (idiopathic, post-infectious and symptomatic thrombocytopenic purpura, acquired thrombocytopenia). Coagulopathies: clinical study of hemophilia and consumption coagulopathies.

Objectives: Physiopathology of blood coagulation in children. Know the principal hemorrhagic diseases due to alteration of the blood vessels, platelets and plasma factors. Know how to create a diagnostic scheme for hemorrhages. Know the clinical aspects, diagnosis and treatment of purpura of immunological origin.

33. Leukemia. Lymphoma

Clinical characteristics. Initial symptoms, established clinical profile, symptoms of medullary and extramedullary leukemia, leukemic meningosis. Hematologic and differential diagnosis. Therapeutic scheme for acute lymphoblastic leukemia. Pediatric lymphoma.

Objectives: Know the epidemiology and frequency of the different forms of leukemia and lymphoma. Know the general clinical aspects of acute lymphoblastic leukemia (ALL) and the clinical manifestations of extramedullary leukemia. Differential clinical diagnosis. Be able to instigate the systematic diagnosis of an acute leukemia. Know the general treatment guidelines for ALL and possible side effects. Study the different types of lymphoma in children and the general clinical aspects of Hodgkin's lymphoma and Burkitt's lymphoma. Know how to instigate the diagnostic protocol and control the evolution of lymphoma.

34. Oncology

Neuroblastoma: clinical symptoms, image diagnosis. Analytical data. Therapeutic scheme. Wilms Tumor: general symptoms. Abdominal tumors: diagnostic-therapeutic orientation.

Objectives: Learn the principal causes of abdominal mass in newborns, infants and children. Study the diagnostic method for an abdominal mass. Indicate the association between Wilms tumor and certain congenital anomalies.

Know the most common clinical manifestations of Wilms tumor. Establish the analytical, radiological and histological alterations in all cases. Describe the principal side effects of chemotherapy agents. Know how to establish the prognosis for a malignant tumor. Determine a complete therapeutic scheme for an oncology patient.

GENITOURINARY PATHOLOGY

35. Acute glomerulonephritis

Etiopathogeny. Urinary symptoms, general symptoms, complementary tests. Diagnosis. Therapeutic scheme. Differential diagnosis of hematuria. Recurrent hematuria in children.

Objectives: Discuss the most frequent etiologies of glomerular diseases in children and the different forms of clinical presentation. Specify the appropriate diagnostic scheme. Guidelines for the treatment and monitoring of glomerulonephritis. Define the concept of *hematuria* and its differential diagnosis.

36. Nephrotic syndrome in children

Types. Physiopathology. Urinary and biochemical clinical syndrome. Diagnosis. Therapeutic scheme. Differential diagnosis of edema and proteinuria.

Objectives: Define the concepts of *nephrotic syndrome* and *proteinuria*. Know the biochemical alterations and other diagnostic data for nephrosis. Classification of nephrotic syndrome. Evaluate the presence of edema and its differential diagnosis. Differential diagnosis of proteinuria in children.

37. Urinary infection

Etiopathogenic characteristics. Clinical aspects: general symptoms, local symptoms. Diagnosis: complementary tests. Prognosis: criteria for benignancy and potentially serious signs. Therapeutic scheme.

Objectives: Define the concept of *urinary infection* and analyse its importance. Describe the different factors that predispose and condition infection. Describe the clinical procedure for suspected cases. Explain the diagnostic techniques and identify when they should be used and the appropriate indications. Know the treatment, monitoring and control of urinary infection and indications for prophylaxis.

38. Pathology of the male genitalia and inguinal canal

Testicular torsion. Ectopic testis. True cryptorchism. Diagnostic-therapeutic scheme. Other testicular disorders of particular pediatric interest.

Objectives: Know the guidelines for examination of the male genitalia at different ages and the principal malformations of the male genitalia. Know how to determine a diagnostic scheme for an undescended testicle. Know the clinical aspects of testicular pathology.

39. Pediatric gynecology

Disorders of the external genitalia: hymen changes. Synechia of the labia minora. Vulvovaginitis. Differential diagnosis of leukorrhea. Anomalies of the vagina, uterus and ovaries.

Objectives: Know the guidelines for genital examination at different ages. Describe the principal diseases of the ovary, uterus and vagina. Know the principal alterations in the external genitalia of girls. Know how to carry out the differential diagnosis for vaginitis and leukorrhea. Correctly identify signs of suspected child sexual abuse.

PATHOLOGY OF THE LOCOMOTOR APPARATUS

40. Most common orthopedic problems at pediatric age

Description of the most common orthopedic problems: torticollis, scoliosis, kyphosis, congenital hip dislocation, coxa vara, epiphysiolysis of the femoral head, transitory synovitis, *genu valgum* and *genu varum*. Most frequent dystopia of the feet.

Objectives: Know the clinical symptomatology of the principal orthopedic alterations mentioned above. Evaluation of image diagnosis. Initial therapeutic recommendations.

41. Neuromuscular pathology

General concept. Infantile hypotonia. Spinal atrophies. Muscular dystrophies. Other myopathies. Polyneuropathies. Managing cases of neuromuscular pathology in children.

Objectives: Know the diagnostic methodology for neuromuscular disorders. Evaluate the diagnostic tests that indicate determined groups in neuromuscular pathology. Knowledge of genetics in neuromuscular pathology. Therapeutic advances and outlook.

PATHOLOGY OF THE NERVOUS SYSTEM

42. Convulsive syndrome in children

Predisposition factors. Pseudo-convulsions. Classification of epileptic fits and epilepsies. Neonatal convulsions. Convulsions in infants. Fever convulsions: diagnostic-therapeutic orientation. Epilepsy in older children. Treatment of accidental or acute convulsion. Clinical, diagnostic and therapeutic characteristics of epilepsy in children.

Objectives: Define the most common types of epileptic fit during childhood. Define fever convulsions, their study and current therapeutic methods. Establish diagnostic guidelines and immediate procedures to follow for a child suffering an epileptic fit.

43. Bacterial meningitis. Meningococcal disease

Bacterial meningitis. Classification. Pathogenic scheme. Clinical aspects of meningococcal meningitis. Laboratory data. Diagnosis of bacterial meningitis. Emergency treatment, meningitis caused by unknown and specific germs according to its etiology. Prophylaxis.

Objectives: Define the concept of *acute meningitis in children*. Indicate the most frequent agents in meningitis. Plan the diagnosis for bacterial meningitis and indicate the changes in cerebrospinal fluid (CSF). Determine the empirical antibiotherapy for meningitis caused by an unknown germ according to patient age. Establish the appropriate treatment and prophylaxis for meningitis, its complications, prognosis and prophylaxis according to the germ causing the disease. Discuss the varieties of meningococci, their respective immunological complications and the epidemiology of meningococcal infections in children in Spain. Define the concepts of *sepsis* and *meningococcal septic shock*: underlying clinical and analytical diagnostic criteria. Determine the correct immediate therapeutic approach.

44. Aseptic meningitis and encephalitis

Viral meningitis: etiology, clinical aspects, CSF and other complementary tests, differential diagnosis, treatment. Acute encephalitis. Concept, viruses that cause encephalitis, clinical characteristics, CSF and other complementary tests, differential diagnostic scheme, treatment. Reye syndrome.

Objectives: Understand the concepts of *aseptic meningitis* and *decapitated bacterial meningitis*, their etiology, clinical procedures and treatment. Know the general etiology of encephalitis and its clinical characteristics, highlight the characteristics of its herpetic etiology. Know the clinical aspects, diagnosis and treatment of Reye syndrome. Establish a therapeutic protocol for viral meningitis and meningoencephalitis.

45. Developmental disorders in infants

Conceptual bases. Abnormal development. Etiology of developmental disorders. Methods of assessment, diagnosis and treatment. Infantile cerebral paralysis: etiology, clinical forms, prognosis, therapeutic standards.

Objectives: Carry out a diagnosis, clinical and etiological where possible, of developmental disorders. Inform families about early recovery from disorders. Define the concept of *infantile cerebral paralysis* and describe the principal etiological factors. Describe the principal motor deficits and provide early identification of suspected signs. Know the bases of complete treatment for infantile cerebral paralysis.

46. Subnormality and serious behavioral disorders

Concept and classification. Etiology and clinical characteristics. Therapeutic procedures. Minimal cerebral dysfunction. Autism. Most common behavioral alterations during infancy.

Objectives: Understand the concepts of *mental deficiency* and the different degrees of normality. Know the early diagnosis for psychological developmental disorders. Describe the most common symptoms. Establish therapeutic standards. Early identification of behavioral disorders.

47. Intracranial hypertension syndrome. Intracranial tumors

Clinical aspects. Hydrocephalus: classification and etiology. Clinical aspects. Diagnostic methods. Differential diagnosis (macrocephalus, wide fontanel). Treatment. Intracranial tumors: diagnostic orientation. Craniosynostosis.

Objectives: Define the concept of *endocranial hypertension* in children. Know the causes of endocranial hypertension and discuss the signs and symptoms of the onset of endocranial hypertension in newborns, infants and toddlers. Establish diagnostic guidelines for suspected cases of endocranial hypertension. Determine the appropriate emergency treatment. Define the concept of *hydrocephalus*. Indicate the etiologies and diagnostic study. Name the most common intracranial tumors in infants. Indicate the complementary examinations required in suspected cases of intracranial tumor.

PATHOLOGY OF GROWTH AND ENDOCRINOLOGY

48. Pathology of growth

Concepts of *growth and development*. Growth characteristics in the different stages of childhood. Critical periods. Regulatory factors: genetic, neurohormonal, specific, environmental. Secular acceleration of growth. Growth delay: diagnostic orientation of growth delay. Variations of normality. Constitutional and hereditary growth delay. Growth delay with dominant bone disorders. Secondary growth delay. Accelerated growth: principal etiological forms.

Objectives: Recognize normal growth and the concepts of *growth delay* and *accelerated growth*. For cases of growth delay students should be able to provide positive therapeutic solutions where possible. For cases of accelerated growth, students should know how to make a correct assessment and diagnostic approximation. Influence of genetics in growth alterations.

49. Pathology of puberty

Precocious puberty: concept and types. Etiopathogenetic classification. Differential diagnosis. Treatment. Delayed puberty. Diagnostic and therapeutic orientation.

Objectives: Know the morphological and physiological changes during normal puberty. Define the concept of *true precocious puberty*. Know how to establish a diagnostic algorithm and the standard therapeutic procedures for changes in puberty.

50. Pathology of sexual differentiation. Intersex. Congenital adrenal hyperplasia

Intersexuality: sexual determination and differentiation of internal and external genitalia. Concept and classification. Gonadal dysgenesis. Female pseudohermaphroditism. Male pseudohermaphroditism. Diagnostic and treatment scheme. Congenital adrenal hyperplasia: etiological forms. 21-hydroxylase deficiency: clinical aspects, diagnosis and treatment.

Objectives: Know the factors that determine sexual type and the differentiation of genitalia. Evaluate the different types of gonadal dysgenesis and pseudohermaphroditism. Determine the diagnostic-therapeutic scheme for newborns with ambiguous genitalia. Recognize congenital adrenal hyperplasia, the different etiologies and standard therapeutic procedures.

51. Pathology of adolescence. Anorexia nervosa

Physiopathology of psychosocial adaptation: inadaptation or school dysfunction, depression, drug use, antisocial behavior. Health education during adolescence. Anorexia nervosa: clinical aspects and treatment.

Objectives: Early recognition of forms of abnormal behavior during adolescence. Know the most frequent pathologies in this age group. Include the study of sexually transmitted diseases. Define anorexia nervosa. Recognize the signs of anorexia nervosa and determine an early therapeutic scheme.

52. Hypophyseal and thyroid pathology

Hypophysis: hypophyseal dwarfism and diabetes insipidus. Thyroid: biosynthesis of thyroid hormones. Congenital hypothyroidism: causes, clinical aspects and treatment. Screening for congenital hypothyroidism. Hyperthyroidism and goitre.

Objectives: Know the physiopathology of hypothalamo-hypophyseal function and the alterations of the hypothalamo-hypophyseal axis that cause delayed growth. Know the etiology of growth hormone deficiency and the clinical procedures for hypophyseal growth delay. Establish the diagnosis, prognosis and treatment for hypophyseal dwarfism. Know the clinical aspects, diagnosis and treatment of diabetes insipidus. Know the clinical aspects of congenital and acquired hypothyroidism. Establish the diagnosis, prognosis and treatment for congenital hypothyroidism. Know the clinical signs of thyroid hyperfunction. Know how to make the differential diagnosis of gout in children. Be able to create a diagnostic scheme for hypothyroidism in children.

53. Diabetes mellitus. Hypoglycemia

Concept and classification. Type 1 diabetes mellitus: etiopathogeny, physiopathology, symptomatology, evolution and treatment. Preclinical diagnosis of diabetes. Hypoglycemia in children.

Objectives: Indicate the epidemiology of diabetes mellitus in Spain. Know the etiological, pathogenic and clinical factors of infantile or juvenile diabetes: early detection of diabetic decompensation. Determine the appropriate treatment. List the long- and short-term complications. Define the concept of *hypoglycemia* and its different degrees according to age. Study the concept of *hyperinsulinism* and its metabolic diagnosis. Establish a therapeutic scheme for hypoglycemia graded according to age.

PATHOLOGY OF METABOLISM AND NUTRITION

54. Malnutrition. Vitamin pathology

Concept and classification. Etiopathogeny. Epidemiology. Clinical and metabolic characteristics. Diagnostic markers. Treatment. Vitamin D physiopathology. Nutritional rickets: clinical etiopathogeny, diagnosis and treatment. Non-nutritional rickets. Vitamin A deficiency. Hypervitaminosis. Other vitamin pathologies.

Objectives: Define the concept of *malnutrition*. Know the different causes and establish the clinical classification. Know the importance of the relationship between malnutrition and infection. Describe the different clinical forms. Know the potential biochemical and growth effects of malnutrition. Determine the appropriate prophylaxis and pharmacological and dietetic treatment. Know the importance of vitamins in development and maturation during infancy. Vitamin D as a hormone. Know the different types of rickets that can develop in the pediatric age group. Record the symptomatology of vitamin A deficiency. Frequency of vitamin A poisoning. General therapeutic standards for vitamin pathologies.

55. Obesity

Concept and quantitative evaluation. Classification. Primary obesity: etiology, symptomatology, evolution and treatment. Secondary obesity: genetic, endocrine, neurological and psychogenic.

Objectives: Obesity as a health problem. Know the types of obesity and the principal causes. Know the short- and long-term evolution and complications of obesity. Standard complete treatment.

56. Dehydration in infants

Etiopathogeny: predispositionary factors, etiology, pathogeny. Stages of dehydration. Clinical aspects. Diagnosis. Treatment of shock. Oral and parenteral rehydration, etiological and dietetic treatment.

Objectives: Know the electrolytic composition and regulatory mechanisms of body water spaces. Study the concept of *hydroelectrolytic balance* and the role of osmolarity. Know the most common causes of dehydration in infants. Define the clinical types. Establish the indications and limitations of oral and parenteral rehydration. Define the acid-base state and the concepts of *acidosis* and *alkalosis*.

57. Inborn errors of metabolism

Concept. Genetic, enzymatic, biochemical and clinical level. Diagnosis: neonatal selection, diagnosis of heterozygotes. Treatment. Phenylketonuria, galactosemia, accumulation diseases. Mitochondrial cytopathologies.

Objectives: Describe the concept of *congenital inborn error of metabolism* and its genetic or enzymatic level. Clinical diagnosis of the principal congenital errors of metabolism. Early diagnosis: neonatal selection, diagnosis of heterozygotes. Treatment protocols in inborn congenital errors of metabolism.

IMMUNOPATHOLOGY

58. Physiopathology of immunity. Pediatric AIDS

Development of immunity. Mechanisms of nonspecific immunity (cellular and humoral immunity), neutropenia, dysphagocytosis, pathology of the complement system. Pathology of specific immunity: classification, definition of principal forms, suspected signs. Acquired secondary immunodeficiencies. Prophylactic-therapeutic indications for gammaglobulin therapy. Pediatric AIDS. Epidemiology. Clinical and complementary diagnosis. Prophylactic and treatment protocols.

Objectives: Know the physiology of immunity in premature babies, newborns and schoolchildren. Know the clinical signs of suspected immunodeficiency and the principal secondary immunodeficiencies. Control the development of immunodeficiency in children and establish guidelines for the vaccination calendar. Know the basic treatment for immunodeficiencies. Know the mechanisms of AIDS transmission. Identify the principal symptoms and signs of AIDS in the neonatal period, in newborns and in schoolchildren. Distinguish between child carriers of anti-HIV antibodies, HIV-infected children and child AIDS sufferers. Know how to provide appropriate information to families, concerned parties and schools about the disease and cures for children with AIDS. Provide guidance on the prophylaxis of the disease and opportunistic infections and establish the vaccination calendar. Know the current therapeutic schemes.

59. Allergic diseases

Food allergy. Atopic dermatitis. Recurrent urticaria. Gastrointestinal allergy. Drug allergies.

Objectives: Know the incidence of pediatric allergic diseases. Identify the principal clinical signs and symptoms of allergic diseases. Know how to establish a diagnostic protocol and know the appropriate complementary tests and their relevance. Therapeutic scheme.

60. Autoimmune diseases. Collagenosis

Juvenile chronic arthritis: clinical forms. Diagnostic problems in children. Differential diagnosis. Therapeutic orientation. Lupus erythematosus and other type of collagenosis. Kawasaki's disease.

Objectives: Understand the concept of *autoimmune disease* and its clinical spectrum. Know how to identify the clinical forms of juvenile chronic arthritis. Know the use of complementary tests and establish guidelines for the treatment and control of juvenile chronic arthritis. Know the clinical forms of systemic lupus erythematosus. Early detection of neonatal lupus. Know how to establish the differential diagnosis for systemic collagenosis. Describe, diagnose and treat Kawasaki's disease.

INFECTIOUS PATHOLOGY

61. Active immunizations in pediatrics

Antibacterial and antiviral vaccines, systemic and non-systemic. Application, techniques and risks of preventive immunizations. Vaccination calendar.

Objectives: Know the mandatory vaccination calendar. Identify the possible indications and contraindications of vaccines. Have an understanding of non-systemic vaccines in pediatrics.

62. Maculopapular rashes

Measles: clinical aspects, diagnosis, prognosis. Prophylaxis. Treatment. Rubella: Clinical aspects. Diagnosis. Prognosis. Prophylaxis. Treatment. Differential diagnosis of maculopapular rash: principal viral exanthems (measles, erythema infectiosum, roseola) other viral and rickettsial exanthems, bacterial exanthems and exanthems of various origins.

Objectives: Define and correctly identify different exanthems in children. Identify the different types of maculopapular exanthems and know the respective treatments and possible complications. Know the epidemiology, clinical procedures and prophylaxis of measles and rubella.

63. Vesicular-pustular rashes

Chickenpox. Clinical aspects. Complications. Prophylaxis. Treatment. Differential diagnosis: viral vesicular-pustular rashes (smallpox, cowpox, herpes) and non-viral (pyodermitis, scabies, strophulus, polymorphous erythema, rickettsial pox).

Objectives: Identify vesicular-pustular rash illnesses: know the clinical aspects, complications and prophylaxis for chickenpox. Know the clinical aspects and complications of chickenpox in the fetus, newborns and immunodepressed children. Describe primary herpes and the recurrences of herpes infection. Identify neonatal herpes and know how to determine the correct treatment.

64. Enteroviruses. Epidemic parotiditis

Pathogeny of infections with poliomyelitis virus, coxsackievirus and echovirus. Coxsackievirus infections: clinical manifestations. Echovirus infections: principal syndromes. Hepatitis A: principal clinical forms in pediatrics. Parotiditis: clinical aspects, parotid, salival, extraparotid, extrasalival and nervous forms. Clinical and laboratory diagnosis. Prognosis. Prophylaxis and treatment.

Objectives: Know the common characteristics of enteroviruses and their epidemiology. Know the current situation with regard to poliomyelitis. Identify the clinical characteristics of diseases caused by coxsackievirus A and B and echovirus. Know the clinical aspects and diagnosis of epidemic parotiditis. Know how to carry out symptomatic treatment of enteroviruses. Know the clinical aspects and prophylaxis of hepatitis A in pediatrics.

65. Bacterial infections: streptococcal, staphylococcal, whooping cough

Principal streptococci. Scarlet fever: etiopathogeny, clinical aspects and treatment. Characteristics of rheumatic fever in pediatrics. Principal clinical forms of staphylococcal infections. Whooping cough: etiopathogeny, clinical aspects. Respiratory and nervous complications. Clinical, laboratory, radiological and differential diagnosis; prophylaxis, treatment.

Objectives: Understand the concepts and epidemiology of streptococcal and poststreptococcal diseases. Identify the principal streptococci in newborns, infants and school children. Know the epidemiology and clinical characteristics of scarlet fever. Define the concept of *rheumatic fever*, describing the major and minor criteria. Know the complementary diagnostic tests for rheumatic fever. Describe the clinical aspects and risk factors of the principal pediatric staphylococcal infections. Know the therapeutic guidelines. Current epidemiology of whooping

cough. Clinical forms and complications of whooping cough in infants. Value of prophylaxis and therapeutic scheme.

66. Tuberculosis

Clinical study: evolving forms of primary tuberculosis, benign primary tuberculous infection, tracheobronchial adenopathy (clinical aspects, radiology and evolving forms), primary infiltration, pleuritis, pulmonary granuloma. Diagnosis: anamnesis, physical examination, tuberculin tests (techniques, evaluation, interpretation), other complementary tests, numeric evaluation of symptoms. Prophylaxis: exposure, BCG, chemoprophylaxis. Treatment: basic chemotherapy scheme with indications for principal drugs, association and dosage in pediatrics. Principal manifestations of extrapulmonary tuberculosis. Tuberculous meningitis.

Objectives: Know the prevalence of tuberculosis in Spain and the current importance of pediatric tuberculosis, with particular focus on the mechanisms of infection. Establish the indication criteria for tuberculin tests, the appropriate and interpretation. Discuss the advisable therapeutic attitudes in cases of positive tuberculin reaction and determine criteria for chemoprophylaxis. Describe the clinical procedure for pulmonary tuberculosis and tuberculous meningitis. Establish the appropriate complementary tests for suspected cases of tuberculosis. Determine the procedure to follow for a newborn baby of a tuberculosis sufferer. Discuss the current indications for BCG vaccination. Determine the different therapeutic guidelines and duration of treatment for a child with tuberculosis, according to clinical manifestations.

67. Other infections: mononucleosis. Diphtheria. *Kala-azar*. Mycosis

Mononucleosis: clinical aspects, differential diagnosis with diphtheria, treatment. *Kala-azar* in children. Principal mycoses in children: candidiasis.

Objectives: Know the biological characteristics of the Epstein-Barr virus. Know the epidemiology and clinical characteristics of infectious mononucleosis and its etiological and differential diagnoses. Know the complications of infectious mononucleosis and the appropriate treatment. Current state of diphtheria. Identify the clinical aspects and know the diagnosis and treatment of *kala-azar*. Identify the risk factors for suffering mycosis. Know the clinical aspects and diagnosis of the principal mycoses in children, with particular focus on pathology of candida infections. Know how to establish correct treatment and control.

68. Intestinal parasites

Clinical aspects, diagnosis and treatment of ascariasis, toxocariasis, enterobiasis and trichinosis. Most common forms of taeniasis. Imported pathology.

Objectives: Know the life cycle and infection pathways of parasitosis. Describe the clinical symptoms and diagnostic methodology for parasitoses. Know the principal drugs and prophylactic hygienic measures in cases of parasitosis. Principal clinical manifestations considered as imported pathologies: malaria, amebiasis, onchocerciasis.

SOCIAL PEDIATRICS

69. Child accidents. Sudden death

Principal drug poisoning and non-drug poisoning. Emergency treatment and complications. Child accidents: standard prevention procedures. Sudden death.

Objectives: Understand the concepts behind the significance of accidents in children and the role of the environment. Know the epidemiological classification for different age groups and main types of accident. List the most frequent accidents in the different age groups. Describe the general preventive standards. Know the basic first aid procedures for child accidents. Know how to identify cases of hidden abuse and the medical-legal implications. Describe the importance and prevention of sudden death.

70. Basic ethical concepts in pediatrics

Biomedicine. Basic ethical principles. Standard functions of a medical ethics committee.

Objectives: Understand the concepts of *ethics* and *bioethics* in pediatrics. Describe the basic ethical principles and how they are applied.

TEACHING STRUCTURE

THEORY CLASSES: Correspond to the lessons outlined in the teaching programme.

PRACTICAL CLINICAL PROGRAMME: Practical studies will be carried out in the different units of the Hospital de Sant Joan de Déu, with the above objectives and tutored by associate lecturers.

SEMINARS

1. Feeding of healthy infants. Breast-feeding.
2. Diet of school-age children and adolescents.
3. Complementary feeding.
4. Newborn care.
5. Morphological and functional characteristics of low birth-weight newborns.
6. Treatment of jaundice. Phototherapy. Exsanguine transfusion.
7. Oral and parenteral rehydration. Astringent diet.
8. Physiopathology of the principal congenital cardiopathies.
9. Heart failure. Etiology. Clinical aspects. Treatment.
10. Examination of growth.
11. Examination of sexual development.
12. Examination of the respiratory apparatus.
13. Examination of immunity.
14. Examination of the digestive apparatus.
15. Examination of the genitourinary apparatus.
16. Examination of nutritional state.
17. Examination of the thyroid gland.
18. Examination of anterior hypophysis.
19. Examination of posterior hypophysis.
20. Examination of the suprarenal glands.
21. Insulin treatment of diabetes *mellitus*.
22. Dietary treatment of diabetes *mellitus*.
23. Surgical aspects of neonatal distress.
24. Medicinal foods.
25. Pathology of the respiratory pathways.
26. Asthma: therapeutic protocols.
27. Hypertension.
28. Adenopathies.
29. Terminally ill patients.
30. Hypophyseal pathology.
31. Hypoglycemia.
32. Inborn errors of metabolism.
33. Therapeutic approach to convulsions.
34. Pediatric transport.
35. Adoption, guardianship, paternal authority, informed consent.
36. Pediatric rehabilitation.
37. Vitamin pathology in chronic diseases.
38. Tuberculosis in children: prophylactic and therapeutic measures.
39. Cardiopulmonary resuscitation.
40. Sudden death.
41. Prevention of child accidents.
42. Neonatal selection.