

EUROPEAN BOARD OF PAEDIATRICS

BASIC PAEDIATRIC TRAINING

Basic paediatric training covers the age group of children (0 – 10 years) and adolescents (10-19; age groups as defined by the WHO). The object of the training is the attainment of basic knowledge of epidemiological data on health and illness and gaining experience in the evaluation of the somatic, social, psychological and intellectual development of children and adolescents. Furthermore, knowledge and experience should be acquired in the aetiology, pathogenesis, pathophysiology, symptomatology, diagnosis, differential-diagnosis, therapy, rehabilitation and prevention of disorders and diseases, either congenital or arising in childhood and adolescence

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24. Basic knowledge in related specialities

Syllabus

1 General Requirements:

1.1 Empathetic attitude:

Learning to understand the special aspects of the child's and adolescent's needs and to establish and maintain a responsible and trusting relationship with children, adolescents and their families. Special empathy and skills are necessary for interviews with adolescents including national rules for confidential services to adolescents keeping in mind also the need of privacy.

1.2 Professional communication (gaining the confidence of children/ adolescents and care givers):

Learning to establish a professional relationship with the patient and the care givers in order to obtain a comprehensive history, to conduct a physical examination, and to provide appropriate management. Learning to talk in a manner which is understood by the child, the adolescent and the caregiver and convey an appropriate interest and sensitivity. Learning to support and listen, to respond appropriately to anxieties, expectations and frustrations; involving the patient, and - if necessary - the caregiver, in making decisions through common and informed consent for diagnostic and therapeutic procedures.

1.3 Principles of the dialogue in special situations:

Conduct of the first consultation in special situations, such as the diagnosis of malformations, disabilities or malignancies; emotional and mental problems; incurable diseases; child abuse; life threatening situations; terminal illness.

1.4 Understanding other cultures:

Developing a non-discriminatory attitude when dealing with patients and care givers from different social and ethnic backgrounds.

1.5 Knowledge of the rights of children and adolescents, both from a national and a global perspective (e.g. UN Declaration).

1.6 Ethical principles:

Observing the rules of respectful human relations. Observing the declaration of Helsinki when performing scientific research. Role of Research Ethics Committees, ethical committees and review boards. Current ethical issues such as life saving procedures, "dignified dying", organ transplantation and genetic engineering.

1.7 Observing professional discretion and confidentiality

1.8 Attitude to colleagues:

Establishing and maintaining interdisciplinary and cooperative relationships with colleagues, medical and non-medical personnel in hospital and community, avoiding criticism in the absence of these persons and maintain a constructive dialog. Knowledge of professional responsibilities in respect of serious concerns about the

skills or behaviour of colleagues.

1.9 Self-criticism:

Recognising personal limitations and learning when to seek advice and assistance, admitting the truth in case of error.

1.10 Observing personal bodily hygiene

1.11 Teamwork

1.12 Good communication with self-help groups and parent associations

1.13 Cost consciousness of medical care:

Learning to manage problems by using appropriate resources, understanding the importance of avoiding unnecessary investigations and hospitalisation.

1.14 Tuition:

Learning to present medical problems clearly and understandably.

1.15 Documentation:

Learn to write clear and understandable medical records (including history, status and regularly updated courses of a disease as well as outlook for special needs of the patient) and professional reports.

1.16 Quality assurance:

Evaluating the effectiveness of management plans through proper recording and periodic assessment.

1.17 Medical law:

Acquiring knowledge of relevant medical law and regulations.

1.18 Giving interviews:

Learning to give objective information, awareness of whether one is authorised to do so and meticulous observation of professional discretion.

1.19 Critical appraisal of the literature and readiness for permanent continuing medical education:

Observing the habit and principle of self-education in order to continuously update and refresh knowledge during training and as a lifelong commitment to continuing education.

2 Knowledge of normal development processes and their possible variations:

2.1 Milestones of the anatomical and functional prenatal development:

- Normal development
- Specificity of vulnerable phases
- Risks and influences

- Preventive screening programmes

2.2 Evaluation of the condition and development of the newborn and the neonatal adaptation:

- Assessment of the gestational age
- Assessment of vital signs (i.e. Apgar-score)
- Scoring system for somatic and nervous system maturity
- Postnatal adaptation of respiration, circulation, etc.

2.3 Growth:

- Normal growth and physical development through infancy, childhood and adolescence: normal variations.
- Factors determining growth in different periods
- The effects of social and emotional deprivation on growth
- Influence of genetic, ethnic, prenatal and postnatal environmental factors
- Accurate measurement of length (height), sitting height, weight, head circumference
- Use of growth charts
- Bone age as a measure of skeletal maturity
- Body surface area determination
- Common and important causes of growth failure
- Dental maturation

2.4 Age dependent changes of body composition and anatomy

2.5 Psychomotor, cognitive and social development in childhood:

- The crucial developmental periods of life
- Normal development including gross motor, fine motor, speech and language, emotional, cognitive and social skills: normal variation and deviation.
- Influence of genetic and environmental factors
- Understanding the different methods of developmental assessment: history, clinical observation, standardised tests with normal variations.
- Developmental screening by observation of gross and fine motor, playing behaviour, speech and social behaviour
- Age dependent physiological and pathological reflexes and movement reactions
- Vision and hearing tests at different ages
- Standardised tests: e.g., Denver Developmental Screening Test
- Common causes of developmental delay

2.6 Child behaviour:

- Normal behaviour and emotional development
- Common behaviour problems in childhood

2.7 Biological, cognitive and psychosocial development in Adolescence:

(Early adolescence: ca. 10-13y; Middle a.: ca.13-16y; Late a.: ca. 16-19y)

- Normal sequence and variation of puberty in both sexes
- Biological stages of puberty (Tanner)
- Growth and body composition in puberty
- Puberty related developmental disorders and diseases

- Effect of different chronic diseases on the biological development during puberty
- Cognitive development during adolescence deriving from neurophysiological changes with impact on decision making, executive functions, time prospective and behavioural regulation.
- Psychosocial development during early, middle and late adolescence
- Development and impact of adolescent sexuality
- Psychosocial development: sexual identity, body image, work role, independence, ideals and feelings, role of peers, impact of media, changing of their role in the family, community and society
- Effect of chronic diseases and chronic conditions/disabilities on psychosocial development
- Problems related to sexual orientation
- Focus on gender differentiation and socialisation
- Experimental and risk taking behavioural aspects of adolescents: alcohol, nicotine, drugs, sexual behaviour, reckless driving
- Problems related to deviant behaviour, delinquency and violence (perpetrators and victims)

2.8 Psychodynamics of the sick patient's family:

- Recognition of the structure, the social and educational states and the environment of the family
- Understanding tears, grief, hopes and expectations of care givers
- Estimation of the capacity of family members to understand and to cope with acute and chronic diseases of a child and adolescent and to comply with treatment proposals.

3 Knowledge of care of the healthy and ill child and adolescents:

3.1 Principles of body care for healthy children of different ages:

- Checking the body functions
- Body hygiene
- Swaddling and clothing
- Skin care
- Sleeping position
- Environmental temperature
- Training of bowel habits and bladder control

3.2 Care of newborns and premature babies:

- Special needs concerning care issues

3.3 Care for ill children and adolescents:

- Instruction of care givers about signs requiring medical consultation
Simple diagnostic signs: judging consciousness, activity, temperature, skin changes, movements, eating/dieting, behaviour, vomiting, stool quality and frequency, abdominal pain and distension, swellings, breathing, changes in crying and mood.

3.4 Principles in psychosocial care:

- Knowledge of the elementary needs of infants, children and adolescents

- Parent-child, parent-adolescent interaction
- Preventing developmental and emotional regression in acute and chronically ill children and adolescents.

3.5 Sexual hygiene:

- Daily hygiene in both sexes
- Appropriate clothing
- Sexual education
- Menstrual hygiene
- Contraception and relationship counselling

4 Knowledge of normal nutrition and feeding:

4.1 Age related nutritional requirements and recommendations:

- Water and electrolytes, calories
- Nutritional components: carbohydrates, fat, protein, vitamins, trace elements

4.2 Feeding of new-borns and infants:

- Feeding principles and practices
- Breast feeding
- Formula feeding: demands on artificial milks, types of formulas and indications
- Vitamin and trace element supplements

4.3 Nutrition of children and adolescents and ability to draw up nutritional plans for different ages

5 Knowledge and skills in preventive and social paediatrics:

5.1 Hygiene in healthy and ill children and adolescents:

- Dental hygiene and prevention of dental caries
- Prevention of infectious contamination including sexually transmitted infections
- Obligation to report infectious diseases
- Environmental investigations
- Prevention of infectious contamination in hospitals, rules of isolation
- Avoidance of nosocomial infections in risk patients (immunologically compromised) and on intensive care wards

5.2 Social environmental factors influencing health and disease:

- Causes and effects of environment on health and development, groups of risk
- Strategies of prevention
- Family characteristics: size, nuclear, extended, one parent, stable, reconstituted, broken home, excessive mobility, poverty, education, social and employment status, environment, affluence.
- Educational habits (rigid, overprotection, negligence, violence, misuse etc.)
- Geographical factors (rural, urban)
- Cultural and ethnic factors

5.3 Epidemiology of the region:

- Demographic data
- Concepts of perinatal, neonatal ,infant and adolescent morbidity and mortality rates
- Data on prevalence of diseases - sources and methods of collection
- Endemic and epidemic events

5.4 Current regional health programs:

- General and selective neonatal screening for congenital metabolic diseases, endocrine disorders, infectious diseases
- National health promotion and preventive investigation and/or immunisation programs
- Early recognition of hearing loss, visual defect, cystic fibrosis, oncological diseases etc.
- Kindergarden, pre-school and school health programs

5.5 Sudden infant death syndrome:

- Classification and risk factors
- Prevention

5.6 Early recognition and support of developmental disturbances:

- Early therapeutic intervention and developmental promotion
- Early psychosocial and pedagogical family support
- Interdisciplinary teamwork

5.7 Early recognition of diseases:

- Knowledge and identification of diseases where early recognition is essential
- Identification of individuals and groups at increased risk
- Knowledge of disadvantages of late recognition in physical, emotional, mental and social aspects
- Care of children and adolescents at increased risk

5.8 Immunisation:

- Practical performance
- National vaccination schedules
- Indications and contra-indications

5.9 Environmental pollution:

- Agents and actual forms of pollution
- Effects and diseases through pollution
- Prophylactic measures
- Special regional problems

5.10 Prevention of accidents and poisoning:

- Epidemiological data
- Age dependent causes and risks of accidents and poisoning
- Effective preventive measures

5.11 Aspects of child and adolescent protection:

- Basic educational and pedagogic principles
- Common patterns of subcultures of violence including adolescent partner violence
- Common causes of deprivation and maltreatment
- Recognition of the battered child
- Recognition of physical, emotional and mental negligence
- Recognition of sexual abuse
- Sequella of maltreatment
- Prevention of deprivation and maltreatment
- Teamwork with social-workers, psychologists, representatives of the law and other professionals

5.12 The patient in hospital:

- Indication of hospitalisation
- Rights of children and adolescents in hospital
- Rooming in
- Prevention of deprivation
- Adolescent friendly care

6 Command of basic paediatric diagnostic tools:

6.1 Taking medical history:

- Emphasise those aspects germane to the presenting complaint
- Complete history including prenatal, birth, postnatal, developmental, feeding/eating habits, immunisation, sexual, educational, social and family history
- Considering the option or necessity of taking the complete history with the adolescent alone.

6.2 Assessing physical status:

- Principles and precautions
- Vital functions
- Rapid identification of the well, ill and life threatened patient
- Complete examination of body systems, modified according to the severity of the disease and patient's age and developmental status.
- Include assessment of biological and mental development (including length, weight, BMI and blood pressure, nervous system function, behaviour, emotional condition, Tanner staging)
- Indications for special examinations relating to diseases and the stage of development.
- Special findings

7 Knowledge and skills of general techniques for examination:

7.1 Blood sampling:

- Finger and heel prick
- Venipuncture
- Knowledge of the requirement of the minimal quantity of blood for different tests
- Knowledge of the appropriate blood containers and storage for different tests

7.2 Urine sampling:

- Appropriate sampling methods: spontaneous urine, adhesive bags, catheterisation, suprapubic tap
- Knowledge of the appropriate urine storage for different tests

7.3 Cerebral fluid sampling:

- Lumbar puncture
- Knowledge of spinal fluid storage for different tests
- Contraindications

7.4 Other sampling

8 Laboratory diagnostics:

8.1 Practice of routine analysis:

8.1.1 Urine: Strip-screening, microscopic examination, chamber counting

8.1.2 Blood: haematocrit, haemoglobin, leukocytes quantitative and differentiation, evaluation of blood cells in blood smear (assessment of reports, plus practical experience where relevant)

8.1.3 Skin tests: Tuberculin test and other intracutaneous tests, epicutaneous and prick test, blister fluids

8.1.4 Metabolic tests: Glucose and other striptests

8.2 Ability to interpret laboratory findings:

8.2.1 Knowledge of the normal variation of laboratory findings

8.2.2 Interpretation of serochemical findings:

- of organ functions (liver, kidney, pancreas, bones and muscles)
- inflammatory signs

8.2.3 Blood gas analysis

8.2.4 Urine analysis

8.2.5 Haematological findings

9 Knowledge and skills in diagnostic imaging methods:

9.1 X-ray diagnostics:

- Basic evaluation of X-ray images
- Protection against radiation

9.2 Ultrasound-Sonography:

- Basic knowledge

9.3 Basic knowledge of other imaging methods:

- CT, MRI and nuclear isotope examinations

10 Knowledge, skills and safety precautions of general techniques for treatment:

10.1 Injections

10.2 Infusions

10.3 Transfusions

11 Knowledge of general therapeutic measures in childhood and adolescence:

11.1 Special aspects of pharmacokinetics and dosage of medicaments in childhood and adolescence

11.2 Contraindications and side effects of medicaments

11.3 Application methods of medicaments

11.4 Symptomatic treatment of non-specific symptoms:

- high fever
- pain

11.5 Infusion therapy (see techniques for treatment and relevant disease groups)

11.6 Strategies for increasing compliance / adherence to therapeutic regimens in childhood and adolescence

12 Command of paediatric emergencies:

12.1 Diagnosis and differential diagnosis

12.2 Basic life support and reanimation:

- General measures (temperature, position etc.)
- Mouth to mouth or mouth to nose ventilation
- Mask ventilation and intubation
- Heart stimulation
- Basics of drug treatment

12.3 Preparation for transport and attending

12.4 Shock

12.5 Dehydration

12.6 Respiratory failure

12.7 First aid in accidents

- injuries
- poisoning
- acute intoxication with psychoactive substances
- drowning
- burns and scalds
- inhalation of foreign bodies
- suicide attempts

12.8 Seizures

12.9 Disturbances of consciousness

12.10 Hyperpyrexia

12.11 Acute abdomen

12.12 Metabolic crises

13 Knowledge of the aetiology, pathophysiology, symptoms, diagnosis, differential-diagnosis, prevention and therapy of congenital and acquired diseases:

13.1 Genetic disorders, malformation and dysmorphic syndromes:

13.1.1 Relevant knowledge

- Understanding the molecular basis of inherited disorders
- Common and important genetic disorders
- Screening for genetic disorders
- Diagnostic methods i.e. chromosomal analysis, molecular biology
- Possibilities of early interventions and family support
- Concomitant socio-psychological problems

13.1.2 Relevant skills

- Recognition of signs and symptoms of common genetic and dysmorphic disorders
- Pedigree construction and interpretation

13.1.3 Relevant attitudes:

- The physician's personal attitude to malformed and disabled children and adolescents, his behaviour, the kind of information and the attention given to the family are decisive for the parent's acceptance and compliance
- Promoting optimal developmental skills for adolescents with special needs in cooperation with family and peers
- Preparing transition to adult care in time

13.2 Ante- and perinatal diseases:

13.2.1 Relevant knowledge

- The pregnancy at risk
- Relevant risk factors for birth
- Indications for transfer of a pregnant mother and the child to a specialist perinatal centre

13.3 Neonatal diseases:

13.3.1 Relevant knowledge:

- Prevention of infections
- Prevention of adaptation problems
- Screening program

13.3.2 Relevant skills:

- Evaluation of the vital state
- Assessment of the somatic aspects, the intrauterine growth, gestational age, signs of maturity and the developmental and neurological state (see also 2.2.)
- Teamwork with obstetricians, especially observation of birth at risk
- Routine procedures after birth
- Basic life support and resuscitation
- Use of non invasive monitoring
- Indication for transfer to a neonatal intensive care unit
- Recognition of diseases with surgical emergencies
- Advice and guidance for mothers in feeding and general care of the infant

- Follow up of high risk infants and long term outcome

13.4 Developmental disturbances:

13.4.1 Relevant knowledge:

- Common causes of developmental disturbances
- Common manifestation and epidemiology
- Importance of psychological and pedagogical support
- Rehabilitation methods: physiotherapy, speech and hearing training and other professional help, vocational counseling
- Health system, schools and special organisations for developmental disturbances and handicapped children and adolescents

13.4.2 Relevant skills:

- Recognition and evaluation of normal variations, aberrations from normal, and typical pathological features
- Interpretation of relevant diagnostic tests and imaging methods

13.4.3 Relevant attitude:

- Understanding that variations in growth, development and puberty may cause concern to children, adolescents, care givers and health staff and that these concerns can have long-term effects on psychological development and social relationship.
- Special empathy to and understanding of families with disabled children and adolescents

13.5 Nutritional disorders:

13.5.1 Relevant knowledge:

- Nutritional requirements of premature and small for date babies
- Clinical and laboratory assessment of the nutritional state
- Nutritional requirements in acute and chronic catabolic diseases
- Common feeding problems
- Awareness of dieting behaviour and weight concerns in adolescents
- Interaction between diet and disease (deficiencies, obesity, eating disorders, atherosclerosis)
- Principles and dietary modification in the management of different diseases
- Definition of malnutrition
- Problems of alternative and vegetarian food

13.5.2 Relevant skills:

- Dietary history to estimate intake of major nutrients
- Assessment of the state of nutrition and hydration

13.5.3 Relevant attitude:

- Understanding the importance of good nutrition in childhood and adolescence in reducing diseases in adult life and counteraction against nutritional habits not suitable for children and adolescents

13.6 Diseases of digestive tract and the liver:

13.6.1 Relevant knowledge

- Physiology and functional development of the digestive tract
- Evaluation of the stools
- Pathological processes in gastro-enteritis, malabsorption and maldigestion
- Differentiation of diseases with leading symptoms: acute and chronic diarrhoea, constipation, vomiting, abdominal pain, abdominal masses, bowel obstruction, jaundice and liver enlargement related to stage of development
- Differentiation of symptoms of the gastro intestinal tract from those deriving from the genital organs in boys and girls
- Recognition of the necessity to co-operate with the paediatric surgeon
- Recognition of psychosomatic causes

13.6.2 Relevant skills:

- Recognition and interpretation of the leading symptoms of the digestive tract
- Assessment of dehydration
- Clinical examination of the abdomen including rectal exploration
- Interpretation of laboratory findings and technical and imaging diagnostic methods concerning the digestive tract and the liver

13.7 Diseases of the respiratory organs:

13.7.1 Relevant knowledge:

- Basic respiratory physiology (ventilation, perfusion, gas exchange, lung volume, blood gases)
- Anatomy of the respiratory tract including important abnormalities
- Control of breathing
- Mechanical and immunological disorders of the respiratory system
- Recognition of important respiratory symptoms and of respiratory failure
- Screening for and diagnosis of cystic fibrosis
- Pathophysiology and diagnosis of respiratory allergies
- Airway hyper reactivity
- Influence of smoking and air pollution on respiratory disorders
- Indication for diagnostic procedures including imaging, lung function testing

- and bronchoscopy
- Basic principles in aerosol medication

13.7.2 Relevant skills:

- Recognition of the symptoms of respiratory diseases including relevant techniques of clinical investigation.
- Interpretation of results of common imaging procedures, blood gases and simple tests of lung function
- Performance and interpretation of tuberculin testing
- Interpretation of sweat test
- Ability to prescribe and explain short term and long term treatment
- Ability to perform anticipatory guidance on cigarettes smoking to parents and adolescents with asthma and cystic fibrosis

13.7.3 Relevant attitudes:

- Awareness of the impact of chronic respiratory illness on the patient and on the family
- Understanding the importance of education of care givers and patient with chronic respiratory disorders

13.8 Diseases of the heart and blood vessels:

13.8.1 Relevant knowledge:

- Anatomy and physiology of the foetal circulation and the circulatory changes at birth
- Anatomy and functional consequences associated with common congenital heart defects, especially during puberty
- The association of the cardiac disorders with other abnormalities
- Age related physiological parameters
- Indication of cardiac investigation
- Prevention of bacterial endocarditis

13.8.2 Relevant skills:

- Clinical recognition of cardiac symptoms and heart failure
- Recognition of innocent cardiac murmurs
- Measurement and interpretation of blood pressure

13.8.3 Relevant attitudes:

- Awareness of when to refer to a paediatric cardiologist for cardiological assessment and treatment
- Awareness of special questions and special needs of adolescents with chronic heart diseases

13.9 Immuno-deficiencies and autoimmune disorders:

13.9.1 Relevant knowledge:

- Development of the immunological competence and host defence mechanisms
- Pathological basis of immuno-deficiency and autoimmune disorders
- Clinical and laboratory evaluation of autoimmune disorders
- Indications for substituting, suppressing, or stimulating treatment of the immune system
- Measures for prevention of opportunistic infections

13.9.2 Relevant skills:

- Performance and evaluation of skin testing
- Interpretation of laboratory tests

13.10 Allergies:

13.10.1 Relevant knowledge:

- Pathophysiology of allergic disorders
- The roles of heredity and environment (pollution, allergens)
- Patterns of allergens
- Allergy reaction types
- Patterns of the atopic syndrome
- Laboratory diagnostic tests
- Prophylactic and therapeutic principles

13.10.2 Relevant skills:

- Taking an appropriate history including environmental allergen and other conditioning factors
- Performance, observation and interpretation of skin tests
- Command of anaphylactic shock

13.10.3 Relevant attitude:

- Understanding of the social impact and inconvenience of allergies

13.11 Rheumatic diseases:

13.11.1 Relevant knowledge:

- Pathogenesis and clinical pattern of juvenile idiopathic Arthritis
- Relevant diagnostic (anamnestic, clinical and laboratory) procedures
- Principles of anti-inflammatory and disease modifying anti rheumatic drug treatment (DMARD), treatment with biologicals and early physiotherapy

13.11.2 Relevant skills:

- Interpretation of anamnestic and diagnostic data

13.11.3 Relevant attitude:

- Awareness of the implications of chronic joint inflammation with persistent pain and restricted mobility

- The need for specific contraceptive counselling when under medication

13.12 Diseases of the blood and coagulation

13.12.1 Relevant knowledge

- Development, structure and function of formed elements of the blood and blood forming elements
- Mechanism of haemostasis
- Age dependent normal values of blood cells and haemostasis
- Quantitative and qualitative abnormalities of blood cells
- Evaluation of clinical symptoms and signs
- Diagnosis of leukaemia
- Differential diagnosis of anaemia

13.12.2 Relevant skills:

- Examination of blood cell smears
- Interpretation of results of laboratory examinations

13.13 Tumours

13.13.1 Relevant knowledge:

- Structure and characteristics of malign and benign tumours
- Genetic and environmental factors predisposing to childhood and adolescence malignancies
- Awareness of the varied symptoms of presentation of malignancies
- Differential diagnosis of lymph node enlargement, hepato- and splenomegaly
- Principles of therapeutic regimes and side effects
- Principles of pain relief

13.13.2 Relevant skills:

- Indication for diagnostic investigations
- Interpretation of diagnostic results
- Information and consultation of care givers and children and adolescents
- Supportive and palliative care

13.13.3 Relevant attitude:

- Awareness that care givers of children and adolescents themselves with minor complaints may suspect underlying malignancy
- Recognition of the multidisciplinary management of malignancies
- Principles of bereavement counselling and psychological attitudes in incurable and dying children and adolescents
- Awareness of social impact and restrictions in life and fertility and the need for contraceptive counselling.

13.14 Diseases of the renal and genito-urinary system:

13.14.1 Relevant knowledge:

- Embryogenesis and urinary disorders
- Assessment of common presentations of genito-urinary diseases
- Renal function investigations and indications for them
- Indications of various imaging methods of the urinary tract
- Acute and chronic renal failure
- Impact of early detection and therapy of urinary tract infection including sexually transmitted infections
- Recognition of signs of sexual abuse
- Understanding of micturition and its disorders
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- Hypertension
- Understanding male and female genito-urinary diseases during adolescence

13.14.2 Relevant skills:

- Interpretation of the results of laboratory investigation, renal function tests and imaging
- Principles of treatment

13.14.3 Relevant attitudes:

- Understanding the psychological stresses associated with end stage renal failure and treatment (dialysis, transplantation)
- Understanding the negative impact of enuresis and stress incontinence

13.15 Diseases of the nervous system:

13.15.1 Relevant basic knowledge:

- The neurological examination
- Common causes for neurological and developmental disturbances
- Early symptoms of neuro-muscular problems
- Characteristics of neuro-degenerative and neuro-metabolic diseases
- Common epileptic syndromes
- Principles of the use of anti-convulsive drugs and contraceptive counselling when relevant
- Diagnosis and management of headache
- Staging and differential-diagnosis of coma
- Critical use of relevant investigation: lumbar puncture, sonography, CT, MRI
- Fundamentals of rehabilitative therapy: physiotherapy, speech and hearing training etc.
- Basic principles of rehabilitation: multidisciplinary approach, early

- intervention and psycho-social family support
- The multiply-handicapped child and adolescent

13.15.2 Relevant skills:

- Common tests for reflexes, fine and gross motor function, speech and social behaviour
- Vision and hearing tests at different ages
- Interpretation of relevant investigations and results
- Basic therapeutic principles concerning seizures

13.15.3 Relevant attitudes:

- Awareness of the psycho-social impact for families especially in brain damaged children and adolescents with mental retardation
- Awareness of the problems of mental handicapped adolescents regarding sexuality and partnership.

13.16 Diseases of the muscles:

13.16.1 Relevant knowledge:

- Early symptoms and signs of muscle problems
- Indications for relevant investigations: Nerve conduction, EMG, muscle biopsy, laboratory investigations
- Relationships to metabolic diseases

13.17 Diseases of the skeleton and joints:

13.17.1 Relevant knowledge:

- Anatomy and physiology of bone growth
- Pathophysiology of rickets, prevention, diagnosis and treatment
- Bone and joint manifestation of systemic diseases
- Causes of deformities of joints and bones
- Early diagnosis and treatment of hip dysplasia and epiphysiolysis capitis femoris
- Early diagnosis and treatment of osteomyelitis and osteoarthritis
- Differential-diagnosis in children and adolescents with a limp
- Pharmacology of anti-inflammatory drugs
- Disorders of the skeleton and joints during adolescence

13.17.2 Relevant skills:

- Clinical assessment of the musculoskeletal system
- Interpretation of bone X-rays, ultrasound and magnetic resonance imaging
- Interpretation of laboratory tests

13.17.3 Relevant attitude:

- Understanding the special considerations involved in investigation of fractures where non accidental injury is possible
- Understanding the psychological problems in children and adolescents with deformities
- Understanding the problems of physically handicapped adolescents with regard to sexuality and partnership.

13.18 Endocrinopathies:

13.18.1 Relevant knowledge:

- Hormonal influences
- Sexual and growth development and abnormalities
- Problems of diabetes mellitus
- Eating disorders (bulimia, anorexia nervosa, obesity)
- Screening for endocrine disorders
- Indications of appropriate investigations, e.g. hormonal concentrations , loading tests, chromosomal and gene mutation analysis

13.18.2 Relevant skills:

- Accurate and precise measurement of height, sitting height, weight and head circumference
- Assessment of sexual, physical and mental development
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13.18.3 Relevant attitude:

- Understanding the importance of teamwork in diabetic care
- Understanding the psychological problems in children and adolescents with early or late onset of puberty, growth delay or excessive growth, chronic diseases, ambiguous genitalia, disorders of sexual development.
- Understanding of being a part of a multidisciplinary team in the treatment of adolescents with chronic, oncological etc diseases
- Ability to perform anticipatory guidance for adolescents with diabetes mellitus or other chronic hormonal diseases and for their parents regarding eating habits, tobacco- and drug use

13.19 Metabolic disorders:

13.19.1 Relevant knowledge:

- Principles of biochemical defects in common metabolic disorders
- Symptoms and signs of metabolic disorders in new-borns and in older

children

- Laboratory pointers of metabolic disorders
- Nutritional impacts in metabolic disorders
- Neonatal screening

13.19.2 Relevant skills:

- Administration and interpretation of tests of common metabolic disorders

13.20 Infectious diseases:

13.20.1 Relevant knowledge:

- Classification of infectious agents
- Causes of vulnerability to infections
- Main symptoms of infections
- Mechanisms of materno-fetal infections
- Mechanisms of sexually transmitted infections
- Common infections of newborns, children and adolescents
- Differential diagnosis of exanthematous infections
- Immunisation and control of infectious diseases
- Nosocomial infections and prevention
- Important world wide infections and their variations among different geographic areas
- Fever of unknown origin

13.20.2 Relevant skills:

- Prevention of nosocomial infections
- Management of septic shock
- Practice of immunisation
- Collection and safe handling of microbial specimens
- Interpretation of laboratory tests, imaging and serological results
- Action and classification of antimicrobial agents

13.20.3 Relevant attitudes:

- Appreciation of the scope and limitation of the laboratory in diagnosis and management of infectious diseases
- Appreciation of the relationship of the epidemiology of sexually transmitted infections to sexual behaviours of young people.

13.21 Skin diseases:

13.21.1 Relevant knowledge:

- Normal structure and function of the skin, hairs and nails
- Infections of the skin (fungal, bacterial, viral)
- Cutaneous and mucosal manifestations of systemic diseases: genetic

- disorders, infections, connective tissue disease, malignancy
- Common problems: napkin rash, erythemas, impetigo, eczema, naevi, eruptions
- Skinproblems during pubertal changes

13.21.2 Relevant skills:

- Ability to describe dermatological diseases in terms of morphology, configuration and distribution
- Sample blister fluid
- Local therapy

13.21.3 Relevant attitude:

- Understanding the stigmatisation of children and adolescents with severe skin problems
- Understanding that visible skin problems may be a cause of severe psychological stress for adolescents

13.22 Psychological, psychosomatic and behaviour disorders:

13.22.1 Relevant knowledge:

- Emotional problems of the sick or disabled patient's family
- Effects of stress on children and adolescents at different ages
- Common behavioural problems at different ages and their management, e.g. early communicative parent/child disturbances, the crying baby, poor sleep patterns, feeding problems, enuresis, encopresis
- Common behavioural problems during adolescence and their management, e.g. parent-adolescent interaction, interaction with peers, school problems, bullying, delinquency
- Common psychosomatic problems, pathogenesis and clinical picture
- Psychological aspects of physical illness
- Common emotional disorders in childhood and adolescence
- The problems of attention deficit/ hyperactivity syndrome
- Problems of the child and adolescent in hospital
- Psychosocial problems of the abused child and adolescent
- Psychosocial problems of handicapped and mentally retarded children and adolescents

13.22.2 Relevant skills:

- Interview regarding psychiatric symptoms
- Performance of simple tests, e.g. developmental test, relevant questionnaires (HEEADSSS: home, education, eating, activities, drugs, sexuality, suicide, safety)
- Principles of diagnostic methods

- Applying basic principles of psychotherapeutic methods and pharmacotherapy in children and adolescents

13.22.3 Relevant attitude:

- Empathic attitude even in difficult situations
- Appreciation of behavioural difficulties in children and adolescents with chronic, disfiguring, disabling and terminal diseases

14 Basic knowledge in related specialities

14.1 Paediatric surgery:

14.1.1 Relevant knowledge

- Diagnostic measures of diseases in paediatric practice probably needing surgical management
- Common preoperative clinical and laboratory examinations, coagulation tests
- Non surgical contraindications against operations
- Preoperative treatment in ill , e.g. shock, fluid-, electrolyte- and acid-base imbalances, infections, coagulation disorders, anaemia, various organic failure, ileus, epilepsy, diabetes
- Assessment of respiratory regulatory disturbances in babies leading to postnarcotic apnoeas

14.1.2 Relevant attitude

- Readiness for optimal interdisciplinary management

14.2 Paediatric orthopaedics

14.2.1 Relevant knowledge

- Diagnosis and treatment of orthopaedic diseases often first observed in paediatric practice

14.2.2 Relevant skills

- Clinical assessment of orthopaedic diseases, especially of the hip in neonates,
- Interpretation of imaging techniques

14.3 Paediatric gynaecology *(see chapter 13.14)

* Where applicable knowledge includes both sexes

14.3.1 Relevant knowledge

- Hormonal influences and function of the sexual organs
- Knowledge about genito-urinary diseases in childhood and adolescence

- Knowledge about sexual differentiation problems and hormonal disorders
- Knowledge about sexual development, behaviour, performance and partnership related problems
- Knowledge about (emergency) contraception
- Physiology and pathology of menstruation
- Sexually transmitted diseases
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14.3.2 Relevant skills

- Staging of sexual development
- Basic examination procedures
- Appropriate communication with young girls

14.3.3 Relevant attitude

- Understanding the psychological problems of adolescents with gynaecological problems
- Awareness of where adolescents can find adolescent friendly services for contraception
- Understanding of the importance of teamwork with the gynaecologists

14.4 ENT-medicine in childhood

14.4.1 Relevant basic knowledge

- Anatomy and function of nose, ear and throat
- Early diagnosis and treatment of hearing impairment
- Disturbances of the voice as diagnostic factor
- Consequences of hearing impairment
- Causes of acquired hearing loss (loud music and noise), consequences and preventive methods
- Diagnostic methods in ENT - medicine including auditory evoked potentials
- Allergic manifestations, prevention and treatment
- Diagnosis and treatment of ENT - infections and complications
- Upper airway obstructions
- Institutions for special care of children with hearing impairment

14.4.2 Relevant skills

- Clinical evaluation of morphological changes of ear, nose and throat
- Interpretation of results of imaging methods
- Screening tests for hearing impairment

14.4.3 Relevant attitude

- Readiness to work in a multi-disciplinary team

- Understand the psychological problems of children with hearing impairment and the importance of early intervention combined with family support

14.5 Paediatric ophthalmology

14.5.1 Relevant basic knowledge

- Congenital problems
- Early diagnosis and treatment of visual defects
- Diagnostic methods in ophthalmology including visual evoked potentials
- Relationship between systemic diseases and eyes
- Institutions and service for special care of children with visual defects

14.5.2 Relevant skills

- Understanding of results of ophthalmological examinations
- Common local management for eye diseases

14.5.3 Relevant attitudes

- Awareness of effects of visual impairment on emotional and mental development
- Awareness of the need of comprehensive early intervention and family support

14.6 Dental medicine in childhood and adolescence

14.6.1 Relevant knowledge

- Normal dentition
- Mechanisms and prevention of dental decay
- Principles of dental care, mouth hygiene, nutrition

14.6.2 Relevant skills

- Education in dental care

14.6.3 Relevant attitude

- Awareness of the importance of consequent dental care