

Pediatrics topic list

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Part "A"

1. Normal growth
 - neonate, infant, toddler, pre-school age, school age, adolescent
 - factors influencing growth (intrauterine, genetics, nutrition, hormonal)
 - measurement (height, weight, circumference, BMI)
 - growth (percentile) charts (normal, SD standard deviation)
2. Normal development
 - Fields of development – gross motor, vision and fine motor, hearing speech and language, socio-emotional, behavioural)
 - Developmental milestones by age – normal limits
 - “Red flags” –developmental delay
3. Prevention in pediatrics – Newborn screening
 - Types of screening (biochemical, point of care)
 - Point of care screening (hip dysplasia, vision/hearing, pulse oximetry)
 - Blood spot test (4 classic + 23) - basic principles
4. Prevention in pediatrics – Vaccination
 - Types: active, passive
 - Immunisation programme – mandatory and advised vaccinations, types of vaccines
 - Advised (eg meningococcus, rota) and specific vaccines (eg RSV)
 - Complications and contraindications
5. Rights of Minors, Child abuse, Child Care Ethics
 - Informed consent in childhood, Assent of the Child
 - Organ donation and organ transplant in childhood
 - Child abuse forms
 - active or failure to act/neglect
 - physical, sexual, emotional abuse, fabricated/induced illness
 - Physical abuse - diagnostic work-up (full skeletal survey)
 - Shaken baby syndrome
 - Prevention of child abuse – When to suspect and how to handle a suspected child abuse.

6. Newborn (term, preterm), delivery room care
 - Maternal history (antenatal care and investigations, maternal factors affecting the fetus (diabetes mellitus, hyperthyreosis, alcohol, smoking, drugs etc), perinatal history
 - Apgar score
 - Premature, term, postterm - definition, typical problems, physiologic parameters (vital signs, measurements), IUGR (intrauterine growth restriction)
 - Routine delivery care (Vitamin K etc)
 - Neonatal physical examination ("baby check")
7. Neonatal resuscitation – fetal circulation, adaptation to extrauterine life, special situations (diaphragmatic hernia, meconium aspiration syndrome)
 - Fetal circulation (Intrauterine->extrauterine circulatory changes (shunts, physiologic adaptation failure of adaptation), intrauterine/fetal hypoxia
 - Newborn resuscitation special aspects, steps ABCD, algorithm of NLS
 - Resuscitation of babies born through meconium stained amniotic fluid, meconium aspiration syndrome – physiology, signs and symptoms, management
 - Diaphragmatic hernia – prenatal dg, management in delivery room and postnatal therapy (medical, surgical)
8. Feeding of the healthy newborn (breastfeeding and formula feeding), the fluid requirement of the newborn, neonatal hypoglycaemia
 - Feeding of the healthy newborn:
 - Breastfeeding, the composition of breast milk, advantages of breastfeeding, establishing breastfeeding
 - Formula feeding
 - Calculation of the fluid requirement of the newborn, fluid balance
 - Definition of neonatal hypoglycaemia, diagnosis and treatment, risk factors for hypoglycaemia
9. Neonatal jaundice (physiologic, pathologic)
 - Physiologic neonatal jaundice – pathophysiology, management, investigations, therapy
 - Pathologic jaundice – pathophysiology (ABO incompatibility, Rh incompatibility, infection, biliary atresia, less common causes (RBC anomalies, enzyme defects, hemoglobinopathies)), direct/indirect hyperbilirubinaemia, early/late presentation
 - Management, therapeutic options (phototherapy, specific therapy, exchange blood transfusion)
 - Kern icterus

10. Sudden infant death

- Definition of sudden infant death syndrome (SIDS)
- Risk factors and prevention options
- Disease processes underlying ALTE / BRUE

11. Care of a sick child, pBLS

- Structured clinical assessment (primary, secondary) – vital signs, assessment of consciousness (AVPU, GCS)
- pBLS - algorithm!
- Assessment of a critically ill child (ABCDE)

12. Fluid and electrolyte balance in children (dehydration, burns – management)

- Assessment of the severity of dehydration
- Fluid resuscitation in hypovolaemic shock and in less severe dehydration
- Planning of fluid management - quantity and quality (glucose, electrolytes)
Management of paediatric patients with burn - special type of dyhydration – fluid resuscitation plan

13. Febrile infant, febrile child – investigation and management

- Definition of fever, subfebrility; temperature measurement
 - Investigations and management of Infants <6 months and Infants > 6 months, children
- Aspects of assessment/investigations: physical examination, microbiology, laboratory tests, imaging
- Management: antimicrobials, antipyretic, analgesic drugs

14. Common childhood infectious diseases

- haracteristics, symptoms, course, therapy of more common viral infections (RSV, HSV, HHV-6, VZV, Parvovirus B19, EBV, CMV, SARS-CoV2, Adenovirus, Rotavirus, Calicivirus, Enteroviruses)
- Characteristics, symptoms, course, therapy of more common bacterial infections (Streptococcal pharyngitis, Scarlet fever, Otitis, Pneumonia, Bacterial enteritis, Urinary tract infections)

15. Children with rash – investigation, management

- Morphology, localisation of the rash
- Aetiology:
 - infection – meningococcal disease, varicella, scarlet fever, sixth disease etc
 - insect bites – tick, scabies,
 - atopic dermatitis, eczma, urticaria
 - systematic disease - HSP, vasculitis etc
- Therapeutic options

16. Respiratory failure in children – assessment and emergency care
 - Assessment: severity, focused investigations, POCUS
 - Management: O2 therapy, non-invasive and invasive ventilation, targeted pharmacological therapy
 - Recognition of ptx, management, tension/non-tension ptx
17. Upper respiratory tract infections, upper airway obstructions (causes of stridor)
 - choana stenosis, atresia
 - laryngomalacia
 - URTI: common cold/pharyngitis/otitis, mononucleosis, croup (laryngitis subglottica) - management!
 - acute, chronic tonsillitis - sleep apnoe
18. Lower respiratory tract infections
 - acute wheeze: causes, presentation, management
 - bronchiolitis: definition, risk factors, pathomechanism, signs and symptoms, therapy, prevention
 - pneumonia: types, pathogens, clinical features, complications, therapy
19. Allergic conditions requiring acute treatment in pediatrics
 - Allergic reaction types, pathomechanism
 - Anaphylaxis: triggering factors, pathomechanism, detection, emergency treatment
 - Severe allergic skin reactions: etiology, detection, emergency treatment
 - Systemic and skin reactions caused by insect bites, complications, care
20. Management of acute circulatory failure/collapse in children: types, diagnosis, management
 - Hypovolaemic group: types, management
 - Cardiogenic group: types, management
21. Management of head injuries in children
 - Initial assessment of a child with a head injury
 - Mild, moderate and severe head injury – investigations and management plan based on the severity
 - Pathogenesis:
 - Primary damage: cerebral concussion, epidural haemorrhage, acute subdural haemorrhage, chronic subdural haemorrhage, intraparenchymal haemorrhage, subarachnoid haemorrhage, penetrating injury, skull fracture
 - Secondary damage (cerebral oedema, hypoxia, seizure)

22. Poisoning in children

- Clinical symptoms of poisons - Toxidromes: Corrosive substances, Carbon monoxide, Medication: e.g. acetaminophen, Alcohol, Drugs of abuse,
- Examination (elements of anamnesis, symptoms, laboratory tests)
- Therapy (Decontamination – surface / gastrointestinal, antidotes, promotion of elimination)

23. Management of the enteral and airway foreign body

- Management of the choking child
- Foreign body aspiration- clinical manifestation, diagnosis, prevention
- Management of the enteral foreign body – clinical features, diagnosis, treatment, complication

24. Diet of the healthy infant and children

- Infant feeding - breastfeeding, breast milk, formula feeding, weaning
- Normal feeding of children and adolescents – nutritional disorders, obesity

25. Problems with growth and somatic development (weight faltering, malabsorption, food allergy and intolerance)

- Weight faltering – clinical features, investigations, management
- Malnutrition, Malabsorption, vitamin and micronutrient deficiencies, Most relevant: coeliac disease
- Food allergy and intolerance - clinical features, diagnosis, specialized infant formulas, diet
- Most relevant: cow's milk protein intolerance

26. Importance of rare diseases in pediatrics

- Definition, characteristics, clinical and genetic diagnosis
- Therapy options: cause, symptomatic treatment, supportive therapy tools (breathing support, feeding devices, physiotherapy, psychology, etc.)
- Prevention options, genetic counselling

27. Inborn errors of metabolism – acute presentation and emergency treatment

- Main types (intoxicating type, defects of energy-metabolism, storage disorders)
- Possible presenting signs (severe metabolic acidosis, hypoglycaemia, cardiac failure, CMP, liver failure irritability, coma, SIDS)
- Investigations
- Treatment (symptomatic treatment; specific treatment – elimination of ammonia, enzyme replacement, specific diet)

28. Chromosomal disorders (numerical) - background, typical clinical features, management

- Down-syndrome
- Edwards-syndrome
- Patau syndrome
- Turner-syndrome
- Klinefelter-syndrome

29. Short stature – differential diagnosis

- Definition (percentile chart)
- Causes:
 - Familial/Constitutional short stature
 - SGA, prematurity
 - Chromosomal disorders/syndromes
 - Chronic diseases, nutritional disorders
 - Psychosocial deprivation
 - Endocrine - hypothyreosis, GH hiány, Cushing-syndroma
- Disproportionate short stature – clinical features, causes
- Examination and investigation
- Treatment

30. Obesity

- Definition, BMI, etiology, diagnosis, complications, long term effects, management, prevention
- Metabolic syndrome

31. ADHD and autism

a. Autism

- Clinical features of autism spectrum disorder
- autistic triad (impaired social interaction, speech and language disorder, imposition of routines with ritualistic and repetitive behaviour)
- differential dg (pl. ADHD, Rett-sy., schizophrenia..etc)

b. ADHD - definition and epidemiology

- Diagnostic criterias
- Clinical features (attention span, signs of hyperactivity)
- Comorbidities (learning difficulties, tic, anxiety, depression...)
- Therapeutic options

32. Suicidal behaviour, role and duty in case of pediatric and adolescent self-harm/crisis; depression; eating disorders

- Depression
 - Definition, epidemiology, types (major, bipolar), causes, risk factors, clinical features (affective, cognitive, motivation deficit)
 - Management (behavioural and psychotherapy, medications)
- Suicide
 - Epidemiology, risk factors, Presuicidal syndrome, Levels of suicidal behaviour (suicidal ideation, attempts, completed suicide)
 - Prevention (primary, secondary, tertiary prevention)
- Eating disorders (anorexia, bulimia)
 - definition, epidemiology, causes, differential dg, management (medical, psychological), severe malnutrition: clinical features, long term effects

Part "B"

33. Neonatal respiratory distress – differential diagnosis, persistent pulmonary hypertension
 - Eupnoe, tachypnoe, bradypnoe, apnoe in neonates – definitions, signs and symptoms, normal and typical blood gas values in respiratory diseases
 - Differential diagnosis of neonatal tachypnoe
 - TTHN (transitory tachypnoea of the newborn – physiology, signs and symptoms, management
 - Respiratory distress syndrome – physiology, signs and symptoms, management
 - Persistent pulmonary hypertension of the newborn - physiology, signs and symptoms, management
34. Neonatal cardiac emergencies, diagnosis and emergency care (congenital heart defects, cardiac arrhythmias)
 - a. Congenital heart defects:
 - Clinical presentation: heart failure, cyanosis, shock
 - Diagnosis: newborn pulse oximetry screening
 - Diagnosis and emergency management of the cyanosed newborn
 - b. Cardiac arrhythmias:
 - Supraventricular tachycardia – investigation, ECG, therapy
 - Congenital heart block – investigation, ECG, therapy
35. Neonatal seizure, congenital anomalies of the nervous system
 - Causes of neonatal seizures: Hypoxic-ischaemic encephalopathy, Perinatal stroke, Intracranial haemorrhage, Meningitis, Congenital infections, Metabolic problems (hypoglycaemia, hypocalcaemia, pyridoxine dependent seizure), Drug withdrawal
 - Types of the neonatal seizure, diagnosis and therapy
 - Congenital anomalies of the nervous system:
 - Neural tube defects: spina bifida occulta, meningocele
 - Macrocephaly, microcephaly, hydrocephalus
36. Neonatal sepsis
 - Definitions (EOS, LOS) – Special aspects of neonatal sepsis Importance of perinatal history (risk factors), pathogens, symptoms, management
 - Neonatal meningitis - pathogens, symptoms, management

37. Medical problems of the preterm infant - definitions, clinical signs, therapy

- Bronchopulmonary dysplasia
- Retinopathy of prematurity
- Anaemia of prematurity
- Intraventricular haemorrhage
- Necrotizing enterocolitis
- Patent ductus arteriosus

38. Asthma in children

- definition, pathomechanism, presentation, management (bronchodilator th, preventive th – stepwise approach)
- management of acute asthma attack

39. Cystic fibrosis

- Epidemiology, genetics, pathophysiology, clinical features, diagnosis, management (respiratory, nutritional)

40. Chest pain – differential diagnosis, management

- respiratory
- musculoskeletal
- cardiogen
- gastrointestinal

41. Arrhythmias in children

- Cardiac arrhythmias: sinus tachycardia, supraventricular tachycardia, ventricular tachycardia, bradycardia - clinical features, diagnosis, management
- Conduction disorders: long QT syndrome, WPW syndrome, AV block – clinical features, diagnosis, management

42. Cardiogenic shock:

- myocarditis: pathogens, clinical features, investigations, management, endocarditis prophylaxis
- cardiomyopathies (dilatative, hypertrophic): features, investigations, management

43. Congenital heart defects, murmurs in children

- innocent murmurs – pathophysiology, clinical features/criteria
- Congenital heart defects
 - I. Right-to-left shunt (cyanotic): Tetralogy of Fallot, TGA
 - II. Left-to-right shunt (breathless/asymptomatic): ASD, VSD, PDA
 - III. Common mixing (breathless and cyanotic): AVSD, Complex heart defects
 - IV. Obstruction (asymptomatic): Aortic stenosis, Pulmonary stenosis, Adult-type CoA (Coartcation of the Aorta)
 - V. Obstruction (sick neonates in shock): CoA, HLHS (Hypoplastic left heart sy)

44. Headache in children, migraine:

- Primary headaches: migraine, tension type headaches – clinical features, differential diagnosis, management
- Secondary headaches (causes, clinical features, investigations, management) – signs of raised intracranial pressure!

45. Seizures in children

- Febrile seizures: simple / complex, clinical features, investigations, management
- Epileptic seizures, convulsions, acute symptomatic seizures – clinical features, investigations, management
- Management of status epilepticus

46. Cerebral palsy

- Etiology, clinical picture, diagnosis, complications, treatment
- Supportive therapy tools (breathing support, nutritional therapy, physiotherapy, etc.)

47. Muscle hypotony – differential diagnosis, management

- Muscular dystrophies, myopathies – clinical features, investigations, diagnosis, management
- Neuromuscular disorders: Guillain-Barré syndrome, Myasthenia gravis, Spinal muscular atrophy (SMA) – clinical features, investigations, diagnosis, differential diagnosis, management

48. Inflammation of the CNS (infections, ADEM):

- meningitis (bacterial, viral), encephalitis – pathophysiology, pathogens, presentation, investigations, management, complications, prevention
- ADEM - clinical features, investigations, diagnosis, management

49. Inflammatory bowel disease in childhood

- Crohn's disease - pathophysiology, signs and symptoms, investigations, management
- Ulcerative Colitis - pathophysiology, signs and symptoms, investigations, management

50. Differential diagnosis of abdominal pain in children:

- Common causes of acute abdominal pain: appendicitis, invagination, gastroenteritis, urinary processes, etc.
- Less common causes of acute abdominal pain: pancreatitis, hepatitis, diseases of the biliary tract, diabetes mellitus, etc.
- Etiology, pathomechanism, typical appearance, diagnosis, therapy
- Chronic abdominal pain – constipation, functional abdominal pain

51. Vomiting in children – differential diagnosis

- Vomiting in infancy - differential dg, GOR/GORD (typical symptoms, investigations, management), pylorus stenosis, pathophysiology, typical presentation, investigations, management), malrotation/volvulus, gastroenteritis, other infections (UTI, meningitis etc)
- Vomiting in children - differential dg: GOR/GORD (symptoms, investigations, management), gastroenteritis, other infections/causes (kidney stone, pneumonia, meningitis etc)

52. Congenital anomalies of the upper GI tract

- Cleft lip and palate (fetal diagnosis, types of presentation, difficulties in the neonatal period (airway, feeding), associated anomalies, surgical management), Pierre-Robin syndrome
- Tracheo-eosophagealis fistula, oesophageal atresia - intrauterine, extrauterine signs and symptoms, investigations, types, neonatological and surgical management

53. Congenital anomalies of the lower GI tract

- Small bowel atresia: presentation, signs and symptoms, investigations, neonatological and surgical management (duodenum atresia – associated disorders jejunal/ileal atresia/stenosis, malrotation/volvulus, meconium ileus, meconium plug syndrome)
- Anus atresia - presentation, sign and symptoms, investigation, neonatological and surgical management
- Hirschprung's disease - pathophysiology, sign and symptoms, investigation, neonatological and surgical management
- Omphalocele/gastroschisis – intrauterine dg, delivery room and neonatological management, surgical therapeutic options

54. Acute inguinoscrotal conditions, Enuresis

- Acute inguinoscrotal conditions
 - Clinical signs, Diagnosis: physical examination and imaging (ultrasound), Differential diagnosis (and the definition of the related disorders), Therapy - Torsion of the testis - MOST relevant, Epididymitis, orchitis, Inguinal hernia (incarcerated hernia), Hydrocele
- Enuresis
 - Definition of enuresis, Differentiation of primary and secondary enuresis, Aetiology , Investigation (necessary examinations), Therapy: Non-pharmacological (psychological, biofeedback training, bedwetting alarm) and Pharmacological (anticholinergic medication, ADH)

55. Childhood urinary tract infection

- Frequency: differences related to age and gender
- Clinical signs: age difference, difference between cystitis and pyelonephritis;
- Collection of urinary sample, Diagnosis: dipstick test, urinary sediment examination, microbiology (frequent microorganisms)
- Definition of recurrent urinary tract infection, related conditions (congenital anomalies of the urinary tract),
- The necessary imaging studies (type) in childhood urinary tract infection
- Treatment of urinary tract infections (major considerations: choice of antibiotics, enteral or parenteral route)

56. Congenital anomalies of the kidney and urinary tract

- Most important congenital anomalies of the urinary tract (VUR, Pyelo-ureteral junction stenosis, Posterior urethral valves, ureterovesical stenosis, duplex kidney and duplicating collecting system, horseshoe kidney, multicystic dysplastic kidney) significant clinical signs
- Diagnosis, methods of imaging studies and nuclear medicine diagnostics (US, sMCU, DMSA, DTPA, MR)
- Complications: urinary tract infections, hypertension, kidney failure
- Treatment, surgical correction

57. Paediatric hypertension

- Definition of hypertension (age-based paediatric blood pressure reference charts: percentile chart)
- Primary (Essential) and secondary hypertension
- Aetiology, Clinical signs, Diagnosis: correct blood pressure measurement technique
- Investigation: Secondary - searching for the cause (type and aim of laboratory and imaging investigations); Diagnosis of end-organ damage
- The main consideration for medical therapy: lifestyle changes, pharmacological treatment
- Hypertensive crisis: definition, clinical signs, antihypertensive therapy

58. Nephrotic and nephritis syndrome

- Nephrotic syndrome: clinical signs, laboratory diagnosis: changes in the blood and urinary markers, treatment (Immunosuppression, differences in response to treatment with steroid and its significance, steroid-sparing medication; Supportive therapy)
- Nephritis syndrome: Clinical signs, Laboratory diagnosis: changes in the blood and urinary markers, A short summary of the main types (PSGN, IgAN, lupus nephritis), the possibilities of differential diagnosis, Treatment of nephritis syndrome (Immunosuppression, Supportive therapy)

59. Acute kidney injury and chronic kidney disease

- Acute kidney injury: Definition (KDIGO), Aetiology: prerenal, renal, postrenal group; Therapy (Fluid restriction, diuretic therapy, Treatment of hyperkalaemia, Indications of dialysis)
- Chronic kidney disease: Definition – eGFR, Aetiology, Clinical features, Strategies of chronic kidney disease, Therapy: Fluid management, diet, Care of the CKD patient (anaemia, short stature, renal osteodystrophy, blood pressure), Metabolic acidosis, electrolyte disturbances (hyperkalaemia)
- Types of renal replacement therapy: Peritoneal dialysis, Haemodialysis, Renal transplantation

60. Anaemia in children

- Definition, normal values in different age groups (haematocrit, haemoglobin), causes (decreased production, increased destruction, blood loss)
- Causes of decrease production (RBC aplasia – e.g. Parvo B19 infection, Diamond-Blackfan anaemia, etc.; ineffective erythropoiesis - iron-, folic acid-, B12 vitamin deficiency, chronic inflammation, chronic kidney failure, etc)
- Iron-deficiency anaemia: clinical features, diagnosis, therapy
- Causes of increased RBC destruction (intrinsic – RBC membrane defects, enzyme defects, hemoglobinopathies; extrinsic causes: immune haemolysis, malaria, mechanical destruction), clinical features and typical laboratory results of haemolysis
- Sickle cell disease, thalassaemia

61. Coagulopathies in paediatric patients

- Pathophysiology of haemostasis
- Bleeding disorders in children
 - Definition of haemophilia, types, clinical features, complications, laboratory signs, management
 - von Willebrand disease
 - Acquired disorders of coagulation, causes, clinical features, management
 - Thrombocytopenia (decreased production, increased destruction, increased consumption, sequestration), clinical features, most relevant: ITP, diagnosis, management

62. Acute leukaemia and lymphomas in paediatrics (ALL, AML)

- Definition, epidemiology, types, presentation, diagnosis – typical FBC values at presentation, differential diagnosis, therapy, prognosis
- Definition, types, presentation, diagnosis, management, prognosis
Most relevant: Burkitt-lymphoma

63. Solid tumours in children

- Epidemiology, Clinical presentation, Diagnostic evaluation
- Basic principles in management of solid tumours
 - Brain tumours: types, presentation, diagnosis, management, prognosis
 - Neuroblastoma: presentation, diagnosis, management, prognosis
 - Wilms-tumour: presentation, diagnosis, management, prognosis
- Side effects of chemotherapy

64. Diabetes in childhood, emergency aspects (hypoglycaemia, DKA)

- Diabetes mellitus – types, epidemiology, pathophysiology, clinical presentation, diagnosis, management, complications, long term follow up
- Diabetic ketoacidosis – typical presentation, emergency management
- Hypoglycaemia in diabetic patients, management

65. Endocrine emergencies

- CAH (congenital adrenal hyperplasia): types, clinical features, dg, therapy
- Hypothyreosis: causes, importance of neonatal screening, clinical features, diagnosis – typical laboratory findings, therapy
- Hyperthyreosis (primary, secondary, tertiary forms), presentation (most relevant: Graves' disease), diagnosis, therapy
- Addison disease – presentation, clinical features, diagnosis, treatment
- Cushing syndrome - presentation, clinical features, diagnosis, treatment

66. Disorders of sexual development, precocious puberty, delayed puberty

- Normal sexual development, Stages of puberty (Tanner)
- Intersex genitals – causes, diagnostic possibilities, therapeutic interventions
- Causes of precocious puberty - diagnosis, management
- Causes of delayed puberty - constitutional; hypogonadotrop hypogonadism, hypergonadotrop hypogonadism - typical features, primary and secondary amenorrhea, diagnosis, treatment

67. Immunodeficiencies in childhood – presentation, diagnosis, treatment

- History (!): Warning signs (Jeffrey Modell Foundation - 10)
- Primary/secondary immunodeficiency
- T cell, B cell, neutrophil, leukocyte, complement system defects
- Therapeutic options

68. Vasculitis in childhood:

- HSP (old) = IgAV (new), pathophysiology, history, presentation, complications, treatment
- Kawasaki: diagnostic criterias (presentation), complications, treatment
- SLE: SLICC2012 criterias, pathophysiology, organ manifestation (especially: skin, serous membranes, kidney, blood), treatment and prevention of relapse

69. Musculoskeletal disorders in children:

- JIA definition, diagnosis – differential dg.! (patient history), management strategy - (medical escalation, options)
- transient coxitis: dg - diffdg, therapy