**Topic List 2022/2023**

1. Normal growth
2. neonate, infant, toddler, pre-school age, school age, adolescent
3. factors influencing growth (intrauterine, genetics, nutrition, hormonal)
4. measurement (height, weight, circumference, BMI)
5. growth (percentile) charts (normal, SD standard deviation)

1. Normal development
   1. Fields of development – gross motor, vision and fine motor, hearing speech and language, socio-emotional, behavioural)
   2. Developmental milestones by age – normal limits
   3. “Red flags” –developmental delay

1. Prevention in pediatrics – Newborn screening
   1. Types of screening (biochemical, point of care)
   2. Point of care screening (hip dysplasia, vision/hearing, pulse oximetry)
   3. Blood spot test (4 classic + 23) - basic principles

1. Prevention in pediatrics – Vaccination
   1. Types: active, passive
   2. Immunisation programme – mandatory and advised vaccinations, types of vaccines
   3. Advised (eg meningococcus, rota) and specific vaccines (eg RSV)
   4. Complications and contraindications

1. Rights of Minors, Child abuse, Child Care Ethics
   1. Informed consent in childhood, Assent of the Child
   2. Organ donation and organ transplant in childhood
   3. Child abuse forms
      * active or failure to act/neglect
      * physical, sexual, emotional abuse, fabricated/induced illness
   4. Physical abuse - diagnostic work-up (full skeletal survey)
   5. Shaken baby syndrome
   6. Prevention of child abuse – When to suspect and how to handle a suspected child abuse.

1. Newborn (term, preterm), delivery room care
   1. Maternal history (antenatal care and investigations, maternal factors affecting the fetus (diabetes mellitus, hyperthyreosis, alcohol, smoking, drugs etc), perinatal history
   2. Apgar score
   3. Premature, term, postterm - definition, typical problems, physiologic parameters (vital signs, measurements), IUGR (intrauterine growth restriction)
   4. Routine delivery care (Vitamin K etc)
   5. Neonatal physical examination (“baby check”)

1. Neonatal resuscitation – fetal circulation, adaptation to extrauterine life, special situations (diaphragmatic hernia, meconium aspiration syndrome)
   1. Fetal circulation (Intrauterine->extrauterine circulatory changes (shunts, physiologic adaptation failure of adaptation), intrauterine/fetal hypoxia
   2. Newborn resuscitation special aspects, steps ABCD, algorithm of NLS
   3. Resuscitation of babies born through meconium stained amnionitic fluid, meconium aspiration syndrome – physiology, signs and symptoms, management
   4. Diaphragmatic hernia – prenatal dg, management in delivery room and postnatal therapy (medical, surgical)

1. Neonatal respiratory distress – differential diagnosis, persistent pulmonary hypertension
   1. Eupnoe, tachypnoe, bradypnoe, apnoe in neonates – definitions, signs and symptoms, normal and typical blood gas values in respiratory diseases
   2. Differential diagnosis of neonatal tachypnoe
   3. TTHN (transitory tachypnoea of the newborn – physiology, signs and symptoms, management
   4. Respiratory distress syndrome – physiology, signs and symptoms, management
   5. Persistent pulmonary hypertension of the newborn - physiology, signs and symptoms, management
2. Neonatal cardiac emergencies, diagnosis and emergency care (congenital heart defects, cardiac arrhythmias)
3. Congenital heart defects:

* Clinical presentation: heart failure, cyanosis, shock
* Diagnosis: newborn pulse oximetry screening
* Diagnosis and emergency management of the cyanosed newborn

1. Cardiac arrhythmias:

* Supraventricular tachycardia – investigation, ECG, therapy
* Congenital heart block – investigation, ECG, therapy

1. Neonatal seizure, congenital anomalies of the nervous system
2. Neonatal seizure:

* Causes of neonatal seizures: Hypoxic-ischaemic encephalopathy, Perinatal stroke, Intracranial haemorrhage, Meningitis, Congenital infections, Metabolic problems (hypoglycaemia, hypocalcaemia, pyridoxine dependent seizure), Drug withdrawal syndrome
* Types of the neonatal seizure, diagnosis and therapy

1. Congenital anomalies of the nervous system:

* Neural tube defects: spina bifida occulta, meningocele
* Macrocephaly, microcephaly, hydrocephalus

1. Feeding of the healthy newborn (breastfeeding and formula feeding), the fluid requirement of the newborn, neonatal hypoglycaemia
   1. Feeding of the healthy newborn:

* Breastfeeding, the composition of breast milk, advantages of breastfeeding, establishing breastfeeding
* Formula feeding
  1. Calculation of the fluid requirement of the newborn, fluid balance
  2. Definition of neonatal hypoglycaemia, diagnosis and treatment, risk factors for hypoglycaemia

1. Neonatal sepsis
   1. Definitions (EOS, LOS) – Special aspects of neonatal sepsis Importance of perinatal history (risk factors), pathogens, symptoms, management
   2. Neonatal meningitis - pathogens, symptoms, management

1. Neonatal jaundice (physiologic, pathologic)
   1. Physiologic neonatal jaundice – pathophysiology, management, investigations, therapy
   2. Pathologic jaundice – pathophysiology (ABO incompatibility, Rh incompatibility, infection, biliary atresia, less common causes (RBC anomalies, enzyme defects, hemoglobinopathies)), direct/indirect hyperbilirubinaemia, early/late presentation
   3. Management, therapeutic options (phototherapy, specific therapy, exchange blood transfusion)
   4. Kern icterus
2. Medical problems of the preterm infant - definitions, clinical signs, therapy
3. Bronchopulmonary dysplasia
4. Retinopathy of prematurity
5. Anaemia of prematurity
6. Intraventricular haemorrhage
7. Necrotizing enterocolitis
8. Patent ductus arteriosus
9. Care of a sick child, pBLS
10. Structured clinical assessment (primary, secondary) – vital signs, assessment of consciousness (AVPU, GCS)
11. pBLS - algorithm!
12. Assessment of a critically ill child (ABCDE)
13. Fluid and electrolyte balance in children (dehydration, burns – management)
14. Assessment of the severity of dehydration
15. Fluid resuscitation in hypovolaemic shock and in less severe dehydration
16. Planning of fluid management - quantity and quality (glucose, electrolytes)
17. Management of paediatric patients with burn - special type of dyhydration – fluid resuscitation plan
18. Febrile infant, febrile child – investigation and management
19. Definition of fever, subfebrility; temperature measurement
20. Investigations and management of

* Infants <6 months,
* Infants > 6 months, children

1. Aspects of assessment/investigations: physical examination, microbiology, laboratory tests, imaging
2. Management: antimicrobials, antipyretic, analgesic drugs
3. Children with rash – investigation, management
4. Morphology, localisation of the rash
5. Aetiology:
   * infection – meningococcal disease, varicella, scarlet fever, sixth disease etc
   * insect bites – tick, scabies,
   * atopic dermatitis, eczma, urticaria
   * systematic disease - HSP, vasculitis etc
6. Therapeutic options
7. Respiratory failure in children – assessment and emergency care
8. Assessment: severity, focused investigations, POCUS
9. Management: O2 therapy, non-invasive and invasive ventilation, targeted pharmalogical therapy
10. Recognition of ptx, management, tension/non-tension ptx
11. Upper respiratory tract infections, upper airway obstructions (causes of stridor)
12. choana stenosis, atresia
13. laryngomalatia
14. URTI: common cold/pharyngitis/otitis, mononucleosis, croup (laryngitis subglottica) - management!
15. acut, chronic tonsillitis - sleep apnoe

1. Lower respiratory tract infections
2. acute wheeze: causes, presentation, management
3. bronchiolitis: definition, risk factors, pathomechanism, signs and symptoms, therapy, prevention
4. pneumonia: types, pathogens, clinical features, complications, therapy
5. Asthma
6. definition, pathomechanism, presentation, management (bronchodilator th, preventive th – stepwise approach)
7. management of acute asthma attack
8. Cystic fibrosis

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

1. Management of acute circulatory failure/collapse in children: types, diagnosis, management
2. Hypovolaemic group: types, management
3. Cardiogenic group: types, management
4. Chest pain – differential diagnosis, management
5. respiratory
6. musculoskeletal
7. cardiogen
8. gastrointestinal
9. Arrhythmias in children
10. Cardiac arrhythmias: sinus tachycardia, supraventricular tachycardia, ventricular tachycardia, bradycardia - clinical features, diagnosis, management
11. Conduction disorders: long QT syndrome, WPW syndrome, AV block – clinical features, diagnosis, management
12. Cardiogenic shock:
13. myocarditis: pathogens, clinical features, investigations, management, endocarditis prophylaxis
14. cardiomyopathies (dilatative, hypertrophic): clinical features, investigations, management
15. Congenital heart defects, murmurs in children
    1. innocent murmurs – pathophysiology, clinical features/criteria
    2. Congenital heart defects
       * Right-to-left shunt (cyanotic): Tetralogy of Fallot, TGA (Transposition of great arteries)
       * Left-to-right shunt (breathless/asymptomatic): ASD, VSD, PDA
       * Common mixing (breathless and cyanotic): AVSD, Complex congentital heart defects
       * Obstruction (asymptomatic): Aortic stenosis, Pulmonary stenosis, Adult-type CoA (Coartcation of the Aorta)
       * Obstruction (sick neonates in shock): CoA, HLHS (Hypoplastic left heart syndrome)
16. Headache in children, migraine:
17. Primary headaches: migraine, tension type headaches – clinical features, differential diagnosis, management
18. Secondary headaches (causes, clinical features, investigations, management) – signs of raised intracranial pressure!
19. Seizures in children
20. Febrile seizures: simple – complex, clinical features, investigations, management
21. Epileptic seizures, convulsions, acute symptomatic seizures – clinical features, investigations, management
22. Management of status epilepticus
23. Cerebral palsy: causes, clinical presentation, management

1. Muscle hypotony – differential diagnosis, management
   1. Muscular dystrophies, myopathies – clinical features, investigations, diagnosis, management
   2. Neuromuscular disorders: Guillain-Barré syndrome, Myasthenia gravis, Spinal muscular atrophy (SMA) – clinical features, investigations, diagnosis, differential diagnosis, management
2. Inflammation of the CNS (infections, ADEM):
3. meningitis (bacterial, viral), encephalitis – pathophysiology, pathogens, presentation, investigations, management, complications, prevention
4. ADEM - clinical features, investigations, diagnosis, management
5. Management of head injuries in children
   1. Initial assessment of a child with a head injury
   2. Mild, moderate and severe head injury – investigations and management plan based on the severity
   3. 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)
6. Poisoning in children
   1. Clinical symptoms of poisons - Toxidromes:
      * 1. Corrosive substances
        2. Carbon monoxide
        3. Medication: e.g. acetaminophen
        4. Alcohol
        5. Drugs of abuse
        6. Investigation, therapy
   2. Decontamination – superficial, gastrointestinal
   3. Specific antidotes
   4. Enhance elimination of the poison
7. Management of the enteral and airway foreign body
8. Management of the choking child
9. Foreign body aspiration- clinical manifestation, diagnosis, prevention
10. Management of the enteral foreign body – clinical features, diagnosis, treatment, complication

1. Diet of the healthy infant and children
2. Infant feeding - breastfeeding, breast milk, formula feeding, weaning
3. Normal feeding of children and adolescents – nutritional disorders, obesity

1. Problems with growth and somatic development (weight faltering, malabsorption, food allergy and intolerance)
2. Weight faltering – clinical features, investigations, management
3. Malnutrition, Malabsorption, vitamin and micronutrient deficiencies, Most relevant: coeliac disease
4. Food allergy and intolerance - clinical features, diagnosis, specialized infant formulas, diet

Most relevant: cow’s milk protein intolerance

1. Inflammatory bowel disease in childhood
   1. Crohn’s disease – pathophysiology, signs and symptoms, investigations, management
   2. Ulcerative Colitis - pathophysiology, signs and symptoms, investigations, management
2. Differential diagnosis of abdominal pain in children: appendicitis, intussusception, infections
   1. Acute abdominal pain - differential dg: appendicitis, intussusception, gastroenteritis, less common conditions (pancreatitis, hepatitis, disorders of the bile system) –typical presentation, pathophysiology, investigations, management
   2. Chronic abdominal pain - differential dg – constipation, functional abdominal pain
3. Vomiting in children – differential diagnosis
4. 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)
5. Vomiting in children - differential dg: GOR/GORD (symptoms, investigations, management), gastroenteritis, other infections/causes (kidney stone, pneumonia, meningitis etc)
6. Congenital anomalies of the upper GI tract (cleft lip and palate, oesophageal atresia, TOF)
   1. Cleft lip and palate (fetal diagnosis, types of presentation, difficulties in the neonatal period (airway, feeding), associated anomalies, surgical management), Pierre-Robin syndrome
   2. Tracheo-eosophagealis fistula, oesophageal atresia - intrauterine, extrauterine signs and symptoms, investigations, types, neonatological and surgical management

1. Congenital anomalies of the lower GI tract (duodenum-small bowel atresia, Hirschsprung’s disease, anorectal malformations, omphalocele, gastroschisis)
2. 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)
3. Anus atresia - presentation, sign and symptoms, investigation, neonatological and surgical management
4. Hirschprung’s disease - pathophysiology, sign and symptoms, investigation, neonatological and surgical management
5. Omphalocele/gastroschisis – intrauterine dg, delivery room and neonatological management, surgical therapeutic options
6. Acute inguinoscrotal conditions, Enuresis
7. Acute inguinoscrotal conditions

* Clinical signs
* Diagnosis: physical examination and imaging (ultrasound)
* Differential diagnosis (and the definition of the related disorders)
* Torsion of the testis - MOST relevant
* Epididymitis, orchitis
* Inguinal hernia (incarcerated hernia)
* Hydrocele
* Therapy

1. Enuresis

* Definition of enuresis
* Differentiation of primary and secondary enuresis
* Aetiology
* Investigation (necessary examinations)
* Therapy
  + - * Non-pharmacological (psychological, biofeedback training, bedwetting alarm)
      * Pharmacological (anticholinergic medication, ADH)

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

1. Paediatric hypertension
   1. Definition of hypertension (age-based paediatric blood pressure reference charts: percentile chart)
   2. 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
* basic concepts of antihypertensive therapy

1. Congenital anomalies of the kidney and urinary tract
   1. 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
   2. Diagnosis, methods of imaging studies and nuclear medicine diagnostics (US, sMCU, DMSA, DTPA, MR)
   3. Complications: urinary tract infections, hypertension, kidney failure
   4. Treatment, surgical correction

1. Nephrotic and nephritis syndrome
   1. 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
  1. 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

1. Acute kidney injury and chronic kidney disease
   1. Acute kidney injury
      * Definition (KDIGO)
      * Aetiology: prerenal, renal, postrenal group
      * Therapy:

* Fluid restriction, diuretic therapy
* Treatment of hyperkalaemia
* Indications of dialysis
  1. 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

Most relevant: hyperkalaemia

* + - Types of renal replacement therapy: Peritoneal dialysis, Haemodialysis
    - Renal transplantation

1. Anaemia in children
   1. Definition, normal values in different age groups (haematocrit, haemoglobin), causes (decreased production, increased destruction, blood loss)
   2. 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)
   3. Iron-deficiency anaemia: clinical features, diagnosis, therapy
   4. 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
   5. Sickle cell disease, thalassaemia
2. Coagulopathies in paediatric patients
   1. Pathophysiology of haemostasis
   2. 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

1. Acute leukaemia and lymphomas in paediatrics (ALL, AML)
2. Definition, epidemiology, types, presentation, diagnosis – typical FBC values at presentation, differential diagnosis, therapy, prognosis
3. Definition, types, presentation, diagnosis, management, prognosis

Most relevant: Burkitt-lymphoma

1. Solid tumours in children
   1. Epidemiology
   2. Clinical presentation
   3. Diagnostic evaluation
   4. Basic principles in management of solid tumours
   5. Side effects of chemotherapy
      * Brain tumours: types, presentation, diagnosis, management, prognosis
      * Neuroblastoma: presentation, diagnosis, management, prognosis
      * Wilms-tumour: presentation, diagnosis, management, prognosis
2. Diabetes in childhood, emergency aspects (hypoglycaemia, DKA)
   1. Diabetes mellitus – types, epidemiology, pathophysiology, clinical presentation, diagnosis, management, complications, long term follow up
   2. Diabetic ketoacidosis – typical presentation, emergency management
   3. Hypoglycaemia in diabetic patients, management

1. Endocrine emergencies (CAH, hypothyreosis, hyperthyreosis)
2. CAH (congenital adrenal hyperplasia): types, clinical features, diagnosis, therapy
3. Hypothyreosis: causes, importance of neonatal screening, clinical features, diagnosis – typical laboratory findings, therapy
4. Hyperthyreosis (primary, secondary, terciary forms), presentation (most relevant: Graves’ disease), diagnosis, therapy
5. Addison disease – presentation, clinical features, diagnosis, treatment
6. Cushing syndrome - presentation, clinical features, diagnosis, treatment
7. Short stature – differential diagnosis
   1. Definition (percentile chart)
   2. Causes:
      * Familial/Constitutional short stature
      * SGA, prematurity
      * Chromosomal disorders/syndromes
      * Chronic diseases, nutritional disorders
      * Pszichosocial deprivation
      * Endocrine - hypothyreosis, GH hiány, Cushing-syndroma
   3. Disproportionate short stature – clinical features, causes
   4. Examination and investigation
   5. Treatment
8. Obesity
   1. Definition, BMI, etiololgy, diagnosis,  complications, long term effects, management, prevention
   2. Metabolic syndrome
9. Disorders of sexual development, precocious puberty, delayed puberty
   1. Normal sexual development
   2. Stages of puberty (Tanner)
   3. Intersex genitals – causes
   4. Diagnostic possibilities, therapeutic interventions
   5. Causes of precocious puberty - diagnosis, management
   6. Causes of delayed puberty - constitutional; hypogonadotrop hypogonadism, hypergonadotrop hypogonadism - typical features, primary and secondary amenorrhea, diagnosis, treatment
10. Inborn errors of metabolism – acute presentation and emergency treatment
    1. Main types (intoxicating type, defects of energy-metabolism, storage disorders)
    2. Possible presenting signs (severe metabolic acidosis, hypoglycaemia, cardiac failure, CMP, liver failure irritability, coma, SIDS)
    3. Investigations
    4. Treatment (symptomatic treatment;  specific treatment – elimination of ammonia, enzyme replacement, specific diet)
11. Chromosomal disorders (numerical) - background, typical clinical features, management
    1. Down-syndrome
    2. Edwards-syndrome
    3. Patau syndrome
    4. Turner-syndrome
    5. Klinefelter-syndrome

1. Immundeficiencies in childhood – presentation, diagnosis, treatment
   1. History (!): Warning signs (Jeffrey Modell Foundation - 10)
   2. innate cellular: differential white cell count, neutrofil funkcion test (NBT), chemotaxis
   3. innate : complement cascade activation test (alternative, classzic, lectin, terminal pathway)
   4. adaptive cellular: cell count (Tc, Th, NK) and function (BCG - Mantoux)
   5. adaptive humoral: cell count (B, Th), IgAMGE levels (age specific!) , funkcion (specific antibody titer to vaccination)
   6. acute presentation: see history – 2 JMF criterias
   7. Therapeutic options
2. Vasculitis in childhood:
   1. HSP (old) = IgAV (new), pathophysiology - history, typical presentation, complications, treatment
   2. Kawasaki: diagnostic criterias (presentation), complications, treatment
   3. SLE: SLICC2012 criterias, pathophysiology, organ manifestation (especially: skin, serous membranes, kidney, blood), treatment and prevention of relapse
3. Musculoskeletal disorders in children:
   1. JIA definition, diagnosis – differencial dg.! (patient history), management strategy - (medical escalation, options)
   2. transient coxitis: dg - diffdg, therapy
4. ADHD és autism
5. 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., schizofrenia..etc)

1. ADHD - definition and epidemiology

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

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

* Definition, epidemiology, types (major, bipolar)
* Causes, risk factors
* Clinical features (affective, cognitive, motivation deficit)
* Management (behavioural and psychotherapy, medications)

1. Suicide

* Epidemiology, risk factors
* Presuicidal syndrome
* Levels of suicidal behaviour (suicidal ideation, attempts, completed suicide)
* Prevention (primary, secondary, terciary prevention)

1. Eating disorders (anorexia, bulemia)
   * definition, epidemiology, causes, differential dg
   * management (medical, psychological)
   * severe malnutrition: clinical features, long term effects