

# CURRICULUM



# IN PRIMARY CARE PAEDIATRICS



European Confederation  
of Primary Care Paediatricians





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# FOREWORD

The European Confederation of Primary Care Paediatricians (ECPCP) is the voice of paediatricians in Europe, at a time when their work in primary health care (PC) is being questioned by health politicians in several countries.

ECPCP was founded in Berlin in November 2009 with the goal of advocating paediatricians as the best trained professionals to provide PC for children, young people and their families. ECPCP has grown since then and today embodies more than 20.000 PC paediatricians from 20 PC paediatric organizations in the European region.

Two years ago, during the third meeting of ECPCP held in Strasbourg, a small group of enthusiastic PC paediatricians led by Carmen Villaizan from the Spanish Association of Primary Care Paediatricians (AEPap), proposed the creation of a curriculum working group. This group was assigned the task of writing a curriculum for a competence based training in paediatric PC settings. The content of this curriculum should focus on effectiveness of interventions and patient safety attuned to the special requirements of PC for children and adolescents.

During the last two years the group did excellent work, including a comprehensive review of the literature and studying different training programs and quality indicators for the elaboration of the curriculum written by and for PC paediatricians.

The source for this curriculum is the world- wide standard post-graduate curriculum edited by the Global Pediatric Education Consortium (GPEC) whose chair is Alfred Tenore past president of European Academy of Paediatrics (EAP). He inspired us with his strong advocacy for primary care paediatrics.

Another impulse comes from the COSI project, coordinated by Gottfried Huss, now President of ECPCP. The COSI project organized a search and broad European consensus of a core set of performance indicators for practicing PC paediatrics which will be applied in a pilot study in 13 countries soon.

As leaders of ECPCP, we are proud to introduce now the completed competence-based curriculum for PC paediatricians.

The curriculum represents an essential framework for professionals working with children in primary care, and surely will be the reference not only for us in ECPCP, but also for Paediatricians working in non-European countries. We wish to pay tribute to everyone involved in this ambitious project, and in particular to the Group leader Carmen Villaizan. Without her quiet and patient dedication, her commitment to methodology and her effectiveness, this long awaited curriculum would never have seen the light of day.

**Dr. Elke Jaeger-Roman**  
*Past President ECPCP*

**Dr. Luis Sánchez**  
*President ECPCP*



# INTRODUCTION

Two years ago, the European Confederation of Primary Care Paediatricians (ECPCP) recognized the need to develop a common European primary care paediatric training program in order to promote self-reflection on the competences that primary care paediatricians need to provide care for their patients, and also to serve as a guide to assess training for paediatric residents in the primary care setting.

The aim of this ECPCP curriculum is to be an open and living document, helpful as a training guide for paediatric residents and also as a tool for practicing primary care paediatricians. It identifies the learning objectives that together will build the framework of the systematic training design.

The ECPCP curriculum is structured in two chapters, with learning objectives divided into knowledges and skills, following Bloom's taxonomy.

The first chapter covers and broadly develops the specific competences of a primary care paediatrician. In the second chapter, we have included learning objectives of non-primary care specific areas, competences shared with hospital practice, as needed by primary care paediatricians in their daily practice albeit with a different resource management and approach. Most of these competences will be trained in a hospital setting but the diversity of European training programs, and even farther, the diversity of teaching programs in different hospitals in the same country, determines that trainees have varied levels of knowledge when they arrive to their training in primary care. In that respect, we have designed a simple layout for this second part that allows to set apart the knowledge areas already acquired by the residents from those areas still not achieved, hence, the paediatric tutor will be able to *point out solely those objectives* which trainees need to learn in primary care setting. That is the reason that lies behind the small squares in front of every item of knowledge and skill; this symbol will make possible to *tick off* the competences already achieved and will provide a quick view of learning needs.

I am very grateful to ECPCP Executive Committee who entrusted this project to the Curriculum Working Group and to the Global Pediatric Education Consortium (GPEC) for his support and receptiveness.

I would like to extend my thanks to primary care paediatricians from different European countries who helped in the development and review of the curriculum contents. Together, they made this project became a reality.

We hope this new Primary Care Curriculum will be a useful tool in the daily practice.

**Carmen Villaizán Pérez**  
Chair ECPCP Curriculum Working Group

Further changes, improvements will be made after a minimum time of two years of implementation in at least 5 European countries

## SPECIFIC PRIMARY CARE AREAS

### Community and Preventive

- Community Paediatrics
- Preventive Paediatrics

### Developmental

- Behavioral and mental Health
- Growth and Development
- Nutrition
- Language, Learning, and Sensory Disorders
- Psychosocial Functioning

### Adolescence

- Adolescent Medicine
- Substance abuse

### Abuse

- Child Abuse and Neglect

### Abilities: attitude and behaviour

- Ethics
- Collaboration
- Global Health awareness
- Patient safety and quality improvement
- Research principles and evidenced-based practice
- Scholarly activity
- Self-leadership and practice management
- Communication and interpersonal skills
- Health advocacy and children's rights
- Professionalism

## Community and preventive

### ■ COMMUNITY PAEDIATRICS

#### Knowledge and understanding

- ☐ Recognize health care systems approach and the variation in systems that exist across and between countries.
- ☐ Recognize that continuous quality improvement requires analysis of care process and outcome measures, as well as planned changes with measurement of results.
- ☐ Recognize importance of a primary care patient centered medical home in meeting child and adolescent needs for all children, and children with special health care needs.
- ☐ Identify role of support programs for families and children with special health care needs.
- ☐ Identify and mobilize community assets and resources toward preventing illness, injury, and related morbidity and mortality.
- ☐ Identify role of school health services within comprehensive school health programs and recognize importance of collaboration during early childhood education between schools and clinical care systems.

#### Skills

##### Be able to:

- ☐ Provide a medical home for all children and families, consisting of well-trained physicians who provide accessible, continuous, comprehensive, family-centred and coordinated medical care.
- ☐ Focus on youth at risk for poor health outcomes and those with special health care needs.
- ☐ Demonstrate advocacy skills to address relevant individual, community, and population health issues.

The curriculum of Community Paediatrics should be complemented with the following areas: Adolescent Medicine, Behavioral and Mental Disorders, Child Abuse and Neglect, Prevention Paediatrics, Psychosocial Functioning, Language and Learning Disorders.

## ■ PREVENTIVE PAEDIATRICS

### 1. PUBLIC HEALTH

#### Knowledge and understanding

- ☐ Recognize available measures used to monitor the health of a child population and how they might be implemented to guide and monitor service delivery.
- ☐ Recognize the resources that may be available from health agencies, including the voluntary sector and allied health professionals.
- ☐ Identify principles and practice of common legal processes and legislation relating to safeguarding all children including the most vulnerable.
- ☐ Recall the evidence to support health promotion activities.

#### Skills

##### Be able to:

- ☐ Identify the key determinants of child health and well being.
- ☐ Counsel families to find help with the management of children in need of protection and the pathways to ensure follow-up.
- ☐ Evaluate population statistics and know how they might be used in service development.
- ☐ Actively participate in health promotion programs.
- ☐ Consult appropriately with specialists to assist in health promotion interventions (e.g., dentists, addiction counselors).
- ☐ Incorporate health promotion activities into daily practice (e.g., prevention of tooth decay, smoking cessation, accident avoidance, obesity prevention).

### 2. IMMUNIZATION

#### Knowledge and understanding

- ☐ Recall objectives of immunizations, immune system and how vaccines work.
- ☐ Recall the vaccine preventable diseases.
- ☐ Recognize local/national policy and schedules.
- ☐ Identify different types of vaccines used and their composition.
- ☐ Recognize reactions to vaccines.
- ☐ Recognize current issues and controversies regarding immunization.
- ☐ Recall the various administration routes of all vaccines.
- ☐ *Recognize cultural and social issues that influence parents choice about accepting immunization of their child.*

## Skills

### Be able to:

- ☐ Obtain a full immunization history.
- ☐ Identify any risk factors for immunization and a detailed history of any previous reactions to vaccines in the child or family member.
- ☐ Detect local reactions to vaccines.
- ☐ Differentiate between co-incidental “reactions to a vaccine” (i.e., those that would have happened anyway and are not due to vaccine) and adverse reactions.
- ☐ Detect children with special vaccination requirements.
- ☐ Advise on vaccines for travel, directing families to the various resources which offer vaccine recommendations for individuals as appropriate.
- ☐ Advise families on contra-indications, absolute and relative.
- ☐ Manage anaphylaxis and other adverse events.
- ☐ Collaborate with others to develop strategies for improving immunization rates.
- ☐ Detect missed opportunities and false contra-indications.

## 3. SPECIFIC IMMUNIZATIONS

- ☐ The primary care paediatrician should recognize the type, composition, schedule recommendations and contraindications of the following vaccines:
  - Influenza vaccine
  - Meningococcal vaccine
  - Pneumococcal vaccine
  - Hepatitis vaccine
  - Tetanus vaccine
  - Diphtheria-tetanus combination
  - Pertussis vaccines (cellular and acellular)
  - DTaP and Tdap vaccines
  - Measles vaccine
  - Mumps vaccine
  - Rubella vaccine
  - Poliovirus vaccine
  - Hemophilus influenza type b vaccine
  - Varicella vaccine
  - Human papillomavirus vaccine (HPV)
  - Rotavirus vaccine
  - Recombinant Calmette and Guérin bacillus (BCG)



#### 4. OTHER DISEASE PREVENTION MEASURES

- ☐ The primary care paediatrician should recognize the indications and counsel parents regarding:
  - Dental protection (fluoride)
  - Skin protection (sunscreen products)
  - Protection against insect bites
  - Heart disease prevention (Tobacco, see Substance Abuse; Obesity, see Nutrition; dyslipemia, see Metabolism)
  - Osteoporosis (tobacco, see substance abuse; obesity, see nutrition)
  - Respiratory disease (second-hand smoke and tobacco use)

#### 5. ANTICIPATORY GUIDANCE

##### Knowledge and understanding

- ☐ Recognize the common causes of household injury.
- ☐ Recall the influence of age on the different types of injury.

##### Skills

##### Be able to:

- ☐ Provide general, age-appropriate anticipative guidance on:
  - Home safety
  - Car restraint systems
  - Bicycle safety
  - Burns
  - Water safety
  - Sleep (SIDS, obstructive sleep apnea, normal patterns)
  - School readiness
  - “Screen” time (TV, computer)
  - Substance abuse
  - Poison prevention (see toxicology and poisoning)
  - Obesity issues (exercise, physical activity, nutrition, food/feeding behavior)
  - Behavior/discipline
- ☐ Provide anticipative guidance based upon regional/local risks and exposures.
- ☐ Perform a physical exam evaluating for signs of injury/trauma.
- ☐ Differentiate between accidental and intentional trauma/injury.

## 6. SCREENING

### Knowledge and understanding

- ☐ Identify which children's growth and development surveillance programs operate in the local area.
- ☐ Identify which neonatal screening programs operate in the area (eg metabolic, hearing and vision).
- ☐ Recognize the difference between opportunistic, targeted and population screening.
- ☐ Recognize the ethical dilemmas posted by screening.

### Skills

#### Be able to:

- ☐ Evaluate and implement screening and surveillance programs:
  - Growth
  - Inborn errors of metabolism
  - Hearing
  - Vision
  - Blood pressure
  - Hypercholesterolemia
- ☐ Explain specific screening results to parents and organize the appropriate follow up investigations.

## Developmental

### ■ BEHAVIORAL AND MENTAL HEALTH

#### Knowledge and understanding

- ☐ Recall norms (percentiles) of normal emotional and behavioral development.
- ☐ Recognize signs and symptoms that indicate serious conditions such as ADHD, autistic spectrum or anxiety disorders or depression.
- ☐ Explain the criteria necessary to make a diagnosis (i.e., DSM).
- ☐ Recognize that observations in the physicians' office may not reflect the symptoms demonstrated in other situations.

#### Skills

##### Be able to:

- ☐ Organize screening for behavioral problems and mental disorders.
- ☐ Establish a climate of mutual trust, informed consent and shared decision-making with children, adolescents, families and caregivers.
- ☐ Assess development and behavior (with the help of standardized tests).
- ☐ Identify resources and protective factors and collaborate with school, family, and community for support and management.
- ☐ Implement multi-modal treatment for complex disorders.
- ☐ Manage common behavior problems such as sleep problems, "the crying baby", feeding disorders, enuresis and encopresis, oppositional behavior.
- ☐ Identify features in the history that may predispose to behavioral problems.
- ☐ Identify the need for specialized input and consult with specialists.
- ☐ Identify abnormal neonatal behavior.
- ☐ Classify mother-infant bonding.
- ☐ Recognize the range of symptoms with which depressive disorders present themselves.
- ☐ Promote nursing policies that allow early and frequent contact.
- ☐ Differentiate between rumination and GI Problems, normal and abnormal repetitive movements.
- ☐ Gain information on behavior and parent-child interaction through observation.
- ☐ Identify co-morbidities associated with behavioral problems.
- ☐ Advise families, school and/or childcare center on the probable causes and management of various forms of child behavior.
- ☐ Formulate a differential diagnosis of a child presenting problems at school.
- ☐ Explain the non-pharmacological and pharmacological treatment approaches of behavioral and mental disorders to children, adolescents, families and caregivers.
- ☐ Advocate for systems of intervention to address behavioral problems in children.
- ☐ React immediately to life-threatening behavioral and mental disorders.
- ☐ Evaluate for side effects of treatment on a regular basis.
- ☐ Provide relevant, age- and cultural appropriate written information to children, families and caregivers about behavioral and mental disorders.
- ☐ Provide timely and legible documentation for collaborators and handovers.

## ■ GROWTH AND DEVELOPMENT

### Knowledge and understanding

- ☐ Recall the effects of fetal growth restriction on long-term health.
- ☐ Identify prenatal factors and peri- and postpartum influences that can affect growth and development of the newborn.
- ☐ Recognize the normal developmental sequence for motor, adaptive, language, and social skills development from birth through childhood.
- ☐ List the meaning, uses, and limitations of bone age.
- ☐ Identify specific health issues, diseases and disorders related to the various stages of growth and development.
- ☐ Recognize warning signs that may signify the potential for abnormal development.
- ☐ Recognize relationship between physical, emotional, intellectual, and social factors and their influence on development and health.

### Skills

#### Be able to:

- ☐ Assess growth at all stages of development using appropriate tools.
- ☐ Perform early detection of children with probable abnormal development.
- ☐ Formulate a differential diagnosis for a child presenting learning or social difficulties.
- ☐ Demonstrate the types of anthropometric measurements used in assessing nutritional status and discuss their value.
- ☐ Utilize body mass index in monitoring growth.
- ☐ Identify normal and abnormal variations in head shape.
- ☐ Identify the growth pattern of acquired microcephaly.
- ☐ Identify the growth pattern of familial macrocephaly.
- ☐ Distinguish between hydrocephaly and macrocephaly.
- ☐ Distinguish between normal growth and abnormal growth by evaluating plots on a growth chart.
- ☐ Identify the normal developmental achievements for the neonatal period.
- ☐ Identify the normal motor developmental milestones and identify the normal cognitive developmental milestones for key age of : 2,4,6,9,12,18,24 months 3,5,6-11 years ( 13,15,17 years variability according countries).
- ☐ Initiate appropriate investigations to help make a diagnosis based upon the history and pattern of abnormal development observed.
- ☐ Communicate effectively with specialists.
- ☐ Determine service needs and select optimal methods to support parents of children with abnormal progress.

## **NUTRITION**

### Knowledge and understanding

#### *General*

- Remember the physiological basis of nutrition and the recommendations for the nutritional requirements at each age.
- Recall the food guide pyramid of healthy foods.
- Identify dietary practices which place infants at risk for nutritional deficiency.
- List the principles and methods for alternative feeding (e.g., via gastrostomy, nasogastric tube) and the common problems that may arise from them.

#### *Specific items*

- Infant feeding:
  - Remember the basic physiology of breast feeding, characteristics and advantages of human milk
  - Recall the common problems and solutions of feeding problems and maternal drugs that will be contraindicated to breast feeding
  - Recognize the indications for the use of protein hydrolysate formulas as well as other specific formulas
  - Identify the cultural influences on the timing of the introduction of solid foods and know the appropriate age for initiating solid food and the appropriate sequence
- Deficiency states:
  - Recall a selection of dietary sources of micronutrients, the functions of those micronutrients, and the effects of their deficiencies (iron, copper, zinc, calcium, phosphate, iodine, folate 12, vitamin D and other vitamins)
  - Identify the symptoms and clinical signs related to the main nutritional deficiencies
  - Recognize those clinical conditions that often require additional nutritional support and the complications of tube feeding
- Obesity:
  - Recall the genetic risk factors, etiology and health problems associated with obesity
  - Identify the lifestyle choices that may contribute to obesity, including inadequate physical activity and excessive “screen” time, (e.g., TV, computer)
  - Recognize the changes in pubertal manifestations that may occur in obese children

## Skills

Be able to:

### *General*

- ☐ Take a detailed dietary history and identify dietary practices which place infants at risk for nutritional deficiency and features which may affect absorption of nutrients.
- ☐ Undertake an accurate anthropometric assessment using a full range of measurements including height, weight, body mass index (BMI), mid-arm circumference.
- ☐ Regularly utilize these measurements to track expected growth.
- ☐ Counsel families about age-appropriate dietary practices.
- ☐ Consult effectively with specialists.

### *Specific items*

- ☐ Infant feeding:
  - Communicate the importance of breast feeding to the mother
  - Make appropriate recommendations to address feeding problems
  - Counsel on breast feeding in premature, cleft lip /cleft palate and sick newborns
  - Advise a mother about appropriate complementary feeding
  - Recognize the signs of food allergy
- ☐ Deficiency states:
  - Check risk factors for the development of malnutrition (e.g., social, psychological, and medical)
  - Detect from a dietary history a diet that is likely to be deficient in a nutrient
  - Apply the principles of dietary supplementation in those with, or at risk of, dietary deficiencies
- ☐ Obesity:
  - Perform an accurate interview and physical examination in children with obesity (measure blood pressure, identify acanthosis nigricans and clinical signs of genetic obesity syndromes)
  - Measure and interpret growth curves and BMI, evaluate abdominal vs. hip circumference and detail pattern of obesity (whether generalized or central)
  - Select investigations to rule out medical conditions associated with obesity and look at co-morbidities
  - Advise on interventional strategies involved in weight reduction
  - Counsel families on the long-term effects of obesity on health
  - Provide long-term follow-up and monitor the treatment using BMI charts
  - Refer a patient with obesity to a specialist when necessary

## ■ LANGUAGE, LEARNING AND SENSORY DISORDERS

### Knowledge and understanding

- ☐ Recall the normal psychomotor and language development milestones.
- ☐ Recognize the alarm signals of psychomotor development abnormalities.
- ☐ Recognize the alarm signals of autism spectrum disorders (ASDs).
- ☐ Identify the DSM-V diagnostic categories for language disorders.
- ☐ Interpret differences between language disorders and speech disorders:
  - Language disorders: phonological, semantic, syntactic, pragmatic
  - Speech disorders: dysarthria, dislalia, diglossia, disfemia

### Skills

#### Be able to:

- ☐ Perform an anamnesis to adequately assess language disorders or speech disorders.
- ☐ Perform a language evaluation to establish a diagnosis of language disorders or speech disorders.
- ☐ Perform a global evaluation of psychomotor development.
- ☐ Implement a specific evaluation of autism spectrum disorders (ASDs) by screening scales like M-CHAT or the use of alarm signals of ASDs.
- ☐ Implement hearing test such as evoked potentials, audiometry to evaluate language disorders or speech disorders and refer appropriately to the Otolaryngologic unit.
- ☐ Refer appropriately to the Neuropediatric unit to complete metabolic, genetic and neuroimaging studies.
- ☐ Refer appropriately the language disorders or speech disorders to early attention, occupational therapy or speech therapy.
- ☐ Carry out a psychosocial evaluation of the child with language disorders or speech disorders and refer if necessary to social work or mental health.

## ■ PSYCHOSOCIAL FUNCTIONING

### Knowledge and understanding

- ☐ Remember the methodology of clinical interview: individual and familiar.
- ☐ Recall the methodology of motivational interview.
- ☐ Recognize risk factors, alarm signals and indicators of child abuse.
- ☐ Identify valuation of social nets.
- ☐ Identify community resources.
- ☐ Identify community and school prevention programs of risk behaviors.
- ☐ Recall laws and legal norms about children and families.
- ☐ Recognize cultural and ethnic differences.
- ☐ Identify ethical principles: Autonomy, Confidentiality, Beneficence and Justice.

### Skills

#### Be able to:

- ☐ Elaborate a psychosocial history:
  - Assessment of behavior of the children in the school
  - Assessment of familiar behavior (parenting, sibling rivalry, discipline, media, divorce, death, violence)
  - Assessment of social behavior with peers
  - Assessment of the free time behavior of the children (TV, internet, social networking)
- ☐ Detect psychosocial problems in children and families.
- ☐ Detect risk factors, alarm signals and indicators of child abuse.
- ☐ Elaborate a three generation map or "genogram".
- ☐ Carry out a motivational interview.
- ☐ Counsel families with affective and socialization needs.
- ☐ Valuate psychological maturity.
- ☐ Execute ethic priorities of values such as autonomy, confidentiality, beneficence and justice and solve conflicts based on them.



## Adolescence

### ■ ADOLESCENT MEDICINE

#### Knowledge and understanding

##### *General*

- ☐ Identify clinical changes related to adrenarche and gonadarche.
- ☐ Recognize that the interrelationships of adolescence involve a combination of biological, psychological and social development.
- ☐ Identify psychosocial risks of adolescence.

##### *Specific items*

- ☐ Delayed puberty:
  - Recall pathological causes and natural history of delayed puberty.
- ☐ Psychological development:
  - Identify sources of stress and the modes of coping by adolescents and their families
  - Recognize social media use patterns and the importance of balance, boundaries, and parental involvement in monitoring use by adolescents
- ☐ Sexual development:
  - Identify that development and exploration of sexual feelings is a normal part of adolescent development
  - Recognize that same and opposite-sex sexual feelings and behaviors has a strong impact on defining an adolescents sexual identity
- ☐ Cognitive development of adolescence:
  - Recognize the limited ability of early adolescents to link cause and effect to the consequences of health behaviors
  - Identify that abstract reasoning develops late in adolescence

#### Skills

##### Be able to:

##### *General*

- ☐ Assess accurately sexual maturity using SMR (Sexual Maturity Rating) stages
- ☐ Interpret the growth chart and bone age x-ray when evaluating constitutional delayed puberty.
- ☐ Interpret changing laboratory parameters through puberty.
- ☐ Interpret basal and stimulated levels of gonadotrophins and testosterone response to human chorionic gonadotrophin(HCG).
- ☐ Utilize appropriate genetic testing.

**Specific items**

- Psychological development:
  - Conduct a psychosocial history using the HEADSS (Home, Education/employment, peer group Activities, Drugs, Sexuality and Suicide/depression) framework
  - Elicit the family dynamics in any routine history and identify its potential impact on symptoms
  - Detect an adolescent “loner” who does not identify with any peers and who may have psychological difficulties
  - Detect an adolescent with a poor self-image which may correlate with many adolescent problems
- Sexual development:
  - Employ different strategies to be able to facilitate the exchange of information about inappropriate sexual behavior
  - Discuss sexual issues with adolescents in a sensitive and professional manner
  - Direct adolescent patients and their families to available confidential services
- Cognitive development of adolescence:
  - Determine the level of cognitive reasoning of adolescents
  - Utilize techniques to facilitate engaging effectively with adolescents appropriate to their level of cognitive development

## SUBSTANCE ABUSE

### Knowledge and understanding

- ☐ Recognise health consequences of substance abuse for individuals and society.
- ☐ Recall general trends in use and abuse of substances, and where to find information about it.
- ☐ Identify substance abuse predictors and risk factors.
- ☐ Retrieve concepts of tolerance of, dependence on and withdrawal from, addictive drugs.
- ☐ Recall major physiologic and behavioral consequences attributable to substance abuse, including the potential for physiologic addiction, specifically for alcohol, cannabis, tobacco, opiates, amphetamines, hallucinogens, cocaine and inhalants.
- ☐ Identify risk of abuse of cough and cold preparations (e.g., pseudoephedrine, dextromethorphan) and of alternative and herbal products.
- ☐ Identify role of the paediatrician in counseling youth and parents, and in education within the schools about the dangers of tobacco/alcohol and other substance abuse.
- ☐ Remember principles of brief motivational interviewing and other counseling techniques to promote healthy behavior change and prevent substance use/abuse.

### Skills

#### Be able to:

- ☐ Obtain information from patients and parents about substance use/abuse, understanding the requisites for privacy and confidentiality.
- ☐ Counsel families about methods to minimize the dangers of substance use/abuse (e.g., abstinence, avoid peer groups with drug usage, appropriate parental support) and to prepare an adolescent and their family for referral for substance use/abuse treatment.
- ☐ Identify signs of ingestion/use and acute intoxication of specific substances like alcohol, cannabis, tobacco, opiates, amphetamines, hallucinogens, cocaine, inhalants or cough and cold preparations.
- ☐ Use toxicology screening results to identify substances used/abused.
- ☐ Refer for further management as appropriate.

## Abuse

### CHILD ABUSE AND NEGLECT

#### Knowledge and understanding

- ☐ Recall concept and types of neglect, abuse and factitious disorder by proxy.
- ☐ Recognize children, parents, family and social characteristics associated with increased risk of neglect, abuse or factitious disorder by proxy.
- ☐ Recognize indicators, manifestations and injuries possibly associated with abuse and neglect.
- ☐ Identify local/state/national requirements for reporting sexual abuse to law enforcement and/or child protection services and legal obligations for reporting suspected abuse.
- ☐ Identify intervention options for families and patients involved in child abuse and factitious disorder by proxy.

#### Skills

##### Be able to:

- ☐ Perform an accurate interview and physical examination in cases of suspected abuse or neglect.
- ☐ Identify the general signs and injuries related to child abuse and neglect and develop a differential diagnosis with conditions that can mimic them.
- ☐ Utilize the appropriate diagnostic procedures and referral to rule out the possibility of abuse or neglect.
- ☐ Provide the first medical care for abused children and adolescent in order to mitigate immediately the identified injuries and refer to appropriate specialist.
- ☐ Document and transmit a detailed report about the abuse or neglect suffered by a child or adolescent to the appropriate authority.
- ☐ Participate in a multidisciplinary team, contributing to joining their multiple roles for protecting children and adolescent rights.

## Abilities: Attitudes and behaviour

### ■ ETHICS

#### Knowledge and understanding

- ☐ Identify the principles of ethics when dealing with patients and family members.
- ☐ Recall the principles of autonomy, beneficence, non-maleficence and justice.
- ☐ Identify the principles of research ethics applied to children and research publication.
- ☐ Recognize the need to be careful when interacting with the pharmaceutical industry (ie, conflict of interest).
- ☐ Recognize the differences between "emancipated minor" and "mature minor".
- ☐ Recognize the importance of confidentiality in the doctor-patient relationship.

#### Skills

##### Be able to:

- ☐ Apply ethical principles and analysis to clinical care and research.
- ☐ Apply national legislation to clinical care and research.
- ☐ Demonstrate awareness of the main professional obligations of doctors.
- ☐ Critically analyze ethical issues commonly encountered in medical practice and formulate a framework within which such issues could be resolved.

### ■ COLLABORATION

#### Skills

##### Be able to:

- ☐ Work effectively in multidisciplinary, inter-professional, and cross-cultural groups.
- ☐ Identify the level competence and skills of other health providers (eg, nurses, community health workers).
- ☐ Respect the diversity of roles, responsibilities, and competence of other professionals in relation to their own.
- ☐ Collaborate with teachers, social workers, community leaders, child protection workers, and other allied health professionals to assess, plan, review and provide health prevention, and interventions.

## ■ GLOBAL HEALTH AWARENESS

### Knowledge and understanding

- Recall United Nations Declaration of Human Rights and United Nations Convention of the Rights of the Child.
- Identify social determinants of health on children's health, health care access, and health outcomes.
- Recognize the role of health organizations: WHO, UNICEF, GAVI, World Trade Organization, World Bank, International Monetary Fund, Non-Governmental Organizations and Governments (eg, Ministries of Health).
- Recognize the content and mechanisms for delivering cost-effective health promotion and disease prevention interventions to children globally or in under-resourced settings.

### Skills

#### Be able to:

- Describe the structure of the health system and the roles and responsibilities of the various levels involved.
- Identify international goals and strategies for improving child and maternal health (eg, Millennium Development Goals [MDGs]).
- Define and interpret key child health indicators such as: neonatal mortality rate, infant mortality rate, under five mortality rate, perinatal mortality rate, low birth weight rate, underweight, stunting and wasting rates.
- Describe the burden of disease of major communicable and non-communicable diseases globally and nationally, including accidents and injuries.

## ■ PATIENT SAFETY AND QUALITY IMPROVEMENT

### Knowledge and understanding

- ☐ Retrieve what a system is (structure, processes, result) and how each component of that system affects outcomes.
- ☐ Recall definitions used in discussions of patient safety including: medical error, near miss event, a sentinel event, preventable adverse events, non-preventable adverse events.
- ☐ Recognize that analysis of variation in data is critical in quality improvement , analyze how variation can be reduced for improvement .
- ☐ Identify the common causes of adverse events in medication and vaccination in pediatric patients in general and in your setting.
- ☐ Take into account the role of ancillary services such as the pharmacy in the prevention of medication errors and the impact of product naming and packaging on medication safety.
- ☐ Recall the epidemiology of medical error and harm in the paediatric ambulatory setting.
- ☐ Identify the off label drug use as a paediatric patient safety risk.
- ☐ Identify the contribution of adverse events to the morbidity and mortality of pediatric patients.
- ☐ Recognize the relationship between the detection of a medical error and the ability to discover and effect improvements .
- ☐ Recall and apply the principle “Don’t Blame the People, Blame the Process” understand the relative role of processes in systems and individuals in producing medical error and harm .

### Skills

#### Be able to:

- ☐ Take into account the importance of assessment and redesign of health care processes before error occurs (manage safety risks)- apply the principles of risk management.
- ☐ Detect and report adverse events internally in the practice and to Critical Incident Report Systems (CIRS).
- ☐ Use appropriate means to disclose medical errors to patients or their family
- ☐ Apply appropriate methods of support for patients and their families after an error producing medical harm occurs.
- ☐ Apply the principles of cold chain and good maintenance of the refrigerator for the storage of vaccines.
- ☐ Keep your emergency equipment always ready –check regularly for expiry dates and replacement .
- ☐ Apply the advantages of computerized order entry (where applicable) and dose –range checking in reducing medication errors.
- ☐ Use best practice guidelines to reduce medical adverse events.
- ☐ Use effective methods of communication in the paediatric team to reduce errors in the ambulatory paediatric setting.

- ☐ Detect which interventions can reduce error in situations (e.g. stress, fatigue, distraction) at high risk for medical error.
- ☐ Promote open-mindedness towards any error- promote effective team functioning and mutual supervision in the prevention of medical error.
- ☐ Create and maintain a learning environment (eg, morning report, patient hand - offs, meetings with partners) in improving patient safety (optimize human and environmental factors).

## ■ RESEARCH PRINCIPLES AND EVIDENCE-BASED PRACTICE

### Knowledge and understanding

- ☐ Recognize the strengths and limitations of the different types of statistical tests: chi-square test versus a t-test, analysis of variance (ANOVA) versus nonparametric (eg, Mann-Whitney U, Wilcoxon).
- ☐ Identify how disease prevalence affects the positive and negative predictive value of a test.
- ☐ Recognize the strengths and limitations of the following types of studies and/or analyses: retrospective, case series, cross-sectional studies, case-control studies, longitudinal studies, cohort studies, randomized-controlled studies, before-after studies, crossover studies, open-label studies, post-hoc analyses, and subgroup analyses.

### Skills

#### Be able to:

- ☐ Formulate a research question/hypothesis.
- ☐ Select and apply appropriate statistical and methodological tools to address the question.
- ☐ Interpret the results of the statistical tests: p-value and a confidence interval.
- ☐ Differentiate relative risk reduction from absolute risk reduction.
- ☐ Interpret sensitivity and specificity.



## **SCHOLARLY ACTIVITY**

### Knowledge and understanding

- ☐ Recognize the importance of self-assessment of professional competence and practice.
- ☐ Recall the principles of research, research ethics and scholarly inquiry.

### Skills

#### **Be able to:**

- ☐ Develop, implement and monitor a personal continuing education strategy.
- ☐ Integrate new learning into practice.
- ☐ Maintain a questioning and inquisitive attitude towards medical information.
- ☐ Give an effective lecture or presentation.
- ☐ Manage sources of research publications and electronic literature databases.

## **SELF-LEADERSHIP AND PRACTICE MANAGEMENT**

### Knowledge and understanding

- ☐ Recall the concepts of managing a practice ethically and efficiently including finances and human resources.

### Skills

#### **Be able to:**

- ☐ Demonstrate time-management, prioritization skills, effective delegation and follow-up skills.
- ☐ Demonstrate problem solving and management skills that enable independent decision making based upon best available evidence.
- ☐ Identify stressors and takes action to minimize their effects.
- ☐ Leadership in crisis resource management (problem solving, situational awareness, communication skills and resource management).
- ☐ Manage relationships effectively, including those with patients and their families, colleagues, and the broader health care team.
- ☐ Give appropriate and helpful feedback to staff.
- ☐ Maintain comprehensive, timely, and legible medical records including patient documents, business applications, hospital documents, and legal documents.

## ■ COMMUNICATION AND INTERPERSONAL SKILLS

### Skills

#### Be able to:

- Communicate effectively with patients (children and youth) and families in order to create and sustain appropriate therapeutic relationships.
- Take a family centered approach when communicating recommendations, alternatives and uncertainties, while demonstrating an understanding of patient/family anxieties and point of view.
- Empower parents (and for adolescents themselves) to be the primary caregiver for their children's medical and social needs.
- Demonstrate active listening.
- Communicate effectively with other health care professionals, using appropriate communication elements required for safe and effective transfer of care between:
  - Medical professionals within an institution
  - Inpatient and outpatient physicians
  - Primary and secondary care physicians
  - Different institutions
  - Hospital and home
  - Medical and non-medical caregivers

## ■ HEALTH ADVOCACY AND CHILDREN'S RIGHTS

### Knowledge and understanding

- ☐ Recall the relevant key national policies, practices and laws, which affect specific groups of children.
- ☐ Identify the intersections between growth, development, health, illness, public policy and child well being.
- ☐ Recognize the essential role of the pediatrician within the family, community, school and political structures.
- ☐ Recognize the role of government, and non-governmental organizations and community groups in developing health policies and advocating for children and youth.

### Skills

#### Be able to:

- ☐ Demonstrate an appreciation of the distinctiveness of health care needs of children and adults.
- ☐ Identify of the unique vulnerability of the child to social, resource and environmental disruptions or stress including war, refugee status, natural/manmade disasters.
- ☐ Detect vulnerable or marginalized populations and respond appropriately (e.g. homeless, children living in poverty, child trafficking, forced labour, forced marriage, and female genital mutilation).
- ☐ Detect opportunities for advocacy, health promotion and disease prevention to individuals and the communities they provide care.
- ☐ Carry out strategies in advocacy including issue identification, data analysis, messaging, audience selection, persistence and evaluation.
- ☐ Responsive to vulnerable groups (eg, pre-term infants).
- ☐ Provide culturally sensitive child-centred and family-centred care and support to children and families from others countries.
- ☐ Strengthen functional links between primary care and other child and maternal public health efforts.

## ■ PROFESSIONALISM

### Knowledge and understanding

- ☐ Understand that medical professionalism is reflected in attitudes, behaviors, character, and standards of practice.

### Skills

#### Be able to display:

- ☐ Honesty, probity and ethical commitment.
- ☐ Commitment to delivering the highest quality of care.
- ☐ Ability to maintain confidentiality of patients, particularly adolescents, as well as family members.
- ☐ Critical and self-critical abilities (reflective practice).
- ☐ Compassion, integrity and respect for others.
- ☐ Commitment in maintaining one's competence through lifelong self-directed learning and continuous professional development.

#### Be able to demonstrate:

- ☐ Capacity for applying knowledge in practice.
- ☐ Management skills and leadership in problem solving, independent decision making, communication skills and resource management.
- ☐ Work effectively in a multidisciplinary team.
- ☐ Teaching, research and leadership skills.
- ☐ Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion and disabilities.
- ☐ Accountability to patients, society and the profession.

## COMPETENCES AREAS SHARED WITH HOSPITAL TRAINING AND NECESSARY FOR PRIMARY CARE

### Organ- and Body System-based Issues

- Allergy
- Cardiology
- Dermatology
- Endocrinology
- Gastroenterology and hepatology
- Genetics
- Gynecology
- Hematology
- Infectious diseases
- Immunology
- Metabolism
- Musculoskeletal disorders
- Nephrology
- Neurology
- Oncology
- Ophthalmology
- Otolaryngology
- Oral and dental
- Respiratory
- Rheumatology
- Urology

### Emergency Care

- Emergencies in primary care paediatrics
- Toxicology

### Neonatal Care

### Palliative Care

### Sports Medicine

### Pharmacology

## Organ- and Body System-based Issues

### ■ ALLERGY

#### Knowledge and understanding

##### *General*

- Remember the four distinct allergy mechanisms (i.e., Gell and Coombs classification).
- Recall the natural history, symptoms and therapeutic options in allergic diseases.
- Recognize skin testing can be inaccurate if the patient is taking antihistamines at the time of skin testing.
- Recognize that in vitro testing is indicated when antihistamines cannot be stopped, when dermatographism is present and when severe anaphylaxis has occurred to the proposed testing agent.
- Recognize the importance of the patient education.

##### *Specific disorders*

- Allergic rhinitis:
  - Recognize the association between allergic rhinitis and sinusitis with otitis media, asthma, urticaria, and eczema
  - Remember that perennial allergic rhinitis is usually caused by indoor allergens
- Urticaria, angioedema, anaphylaxis:
  - Recall the etiologic agents that commonly cause urticarial, angioedema and anaphylaxis
  - Recognize that chronic urticaria does not warrant allergy testing
- Adverse reactions drugs, food, vaccines, insect stings and bites:
  - Recognize the mechanisms of IgE and non-IgE food allergy and food intolerance due to enzyme deficiencies
  - Recall the foods that commonly cause allergic reactions (e.g., milk, soy, eggs, peanuts, seafood, wheat, tree nuts) and that most milk, egg, and soy allergies are outgrown by 5 years of age and most allergies to peanuts, tree nuts, and seafood are not outgrown in early childhood
  - Identify available tests for food allergy and their limitations
  - Remember that penicillin is the most common cause of serious allergic drug reactions in childhood
  - Recognize the various hypersensitivity reactions that penicillin allergy may manifest and know that reactions may be systemic (e.g., anaphylaxis), hematologic (e.g., hemolytic anemia) and renal (e.g., interstitial nephritis)
  - Recognize that allergic reactions to insect stings/bites cause significant morbidity and may manifest with anaphylaxis
  - Recall that vaccine components can be associated with allergic reactions
- Asthma. (see Respiratory)

## Skills

Be able to:

### *General*

- Evaluate factors in the presentation which suggest underlying or serious pathology.
- Formulate a diagnosis based upon history and physical findings.
- Elicit likely allergens responsible for symptoms via a thorough history.
- Determine if there are any exacerbating factors (e.g., pollen, dust, animals, cigarette smoke, molds).
- Assess and initiate management of patients presenting with allergic problems in acute and outpatient settings.
- Manage the side effects of immunotherapy.
- Undertake long term management of allergic conditions.
- Provide preventive counselling on avoidance.
- Effectively coordinate advanced life support when necessary.
- Effectively collaborate with family, health team, and specialists regarding allergy issues.

### *Specific disorders*

- Allergic rhinitis:
  - Interpret the physical signs of allergic rhinitis: nasal discharge, presence of “allergic shiners”, (discoloration beneath eyes), Dennie-Morgan lines, “allergic salute,” (patient rubs nose with the palm of hand upward), transverse crease near the tip of the nose and/or edema in nasal mucosa, geographic tongue, abnormalities on palpebral conjunctiva
  - Distinguish between allergic rhinitis and non-allergic rhinitis by history and physical examination
- Urticaria, angioedema, anaphylaxis:
  - Coordinate immediate and effective treatment for anaphylaxis, including epinephrine
  - Advise on the future risk of anaphylaxis and facilitate an appropriate anaphylaxis treatment and prevention care plan by collaborating with the child, parents, and community
  - Advise on the appropriate use of epinephrine (adrenalin)
- Adverse reactions drugs, food, vaccines, insect stings and bites. (See anaphylaxis):
  - Distinguish allergy from intolerance and be able to explain to parents
  - Interpret common symptoms associated with allergic reactions to vaccines: immediate localized reactions, systemic and delayed reactions that manifest with serum sickness-like reactions
- Asthma. (See Respiratory)

## CARDIOLOGY

### Knowledges and understanding

#### General

- ☐ Recognize the age-dependent cardiac symptoms of children.
- ☐ Remember rate and rhythm disorders.
- ☐ Identify the causes of congestive heart failure in infant and children.
- ☐ Recall the epidemiology of rheumatic fever.
- ☐ Recognize the risk factors for development of endocarditis.
- ☐ Recall the possible cardiac complications of other disorders: hyperthyroidism, Kawasaki disease.
- ☐ Recognize the importance of a family history of cardiovascular disease and familial hyperlipidemia and hypercholesterolemia in children and evaluate appropriately.

#### Specific disorders

- ☐ Hypertension (See Nephrology):
  - Recall prescription, over-the-counter, and illicit drugs likely to elevate the blood pressure
  - Recognize that coarctation of the aorta causes upper extremity hypertension
- ☐ Chest pain:
  - Recognize that chest pain in healthy children is generally not cardiopulmonary in origin
  - Recall the importance of cardiovascular evaluation in patients with chest pain associated with exercise
  - Recall the cardiovascular causes of chest pain
- ☐ Syncope:
  - Recognize the importance of cardiovascular evaluation in patients with syncopal or pre-syncopal episodes with exercise
- ☐ Murmur:
  - Recall the etiology of common heart murmurs and their hemodynamic implications

### Skills

#### Be able to:

- ☐ Interpret correctly regular heart sounds, additional heart sounds, and heart murmurs.
- ☐ Identify common ECG abnormalities.
- ☐ Utilize appropriate imaging study of the chest to help diagnosis.
- ☐ Utilize appropriate the pulse oximeter measure of the oxygen saturation.
- ☐ Identify the clinical manifestations of congestive heart failure at all ages.
- ☐ Differentiate between cardiac and non-cardiac causes of cyanosis.



- ☐ Identify an innocent cardiac murmur and recognize when a child with an innocent murmur requires no further evaluation.
- ☐ Diagnose hypertension appropriately (use age-specific blood pressure tables, appropriate cuff size, and repeated measurements).
- ☐ Provide appropriate counseling for patients with:
  - Chest pain
  - Non cardiovascular syncope
  - Innocent heart murmurs
- ☐ Advise families appropriately about the effects of heart disease.
- ☐ Refer for specialist paediatric cardiology assessment for further management.
- ☐ Respond appropriately to cardiac arrest.

## ■ DERMATOLOGY

### Knowledges and understanding

#### *General*

- ☐ Recognize the characteristics of common and serious rashes.
- ☐ Recall the causes of fever and erythematous rashes.
- ☐ Recognize the cutaneous and mucosal manifestations of systemic diseases.
- ☐ Recall the different potencies of topical steroids and their side effects.
- ☐ Identify the different patterns of drug reaction and of the common precipitants.

#### *Specific disorders*

- ☐ Recognize the clinical manifestations, identify through a description with the age of appearance or disappearance and understand the pathogenesis of:
  - Pigmentary and vascular lesions
  - Atopic dermatitis (eczema)
  - Infectious rashes and infestations
  - Acné
  - Seborrheic dermatitis
  - Urticaria
  - Erythema multiforme
  - Contact dermatitis
  - Pityriasis rosea
  - Pityriasis alba
  - Psoriasis
- ☐ Retrieve that sun damage to the skin.

### Skills

#### **Be able to:**

- ☐ Accurately describe rashes that may be present.
- ☐ Implement a differential diagnosis for elementary skin lesions.
- ☐ Diagnose infectious rashes and infestations using appropriate diagnostic techniques when unable to make diagnosis by observation alone
  - Impetigo, cellulitis, abscess
  - Papular urticaria
  - Scabies
  - Fungal Infection
  - Molluscum contagiosum
  - Warts
  - Pediculosis
- ☐ Plan and manage common skin complaints.
- ☐ Counsel parents on the long term management of children with chronic dermatological diseases.
- ☐ Refer to a paediatric dermatologist when appropriate.

## ■ ENDOCRINOLOGY

### Knowledge and understanding

#### *General*

- Recognize the implications of endocrine complications of other diseases.
- Recall that many endocrine conditions are familial.

#### *Specific disorders*

- Short stature:
  - Retrieve the developmental spectrum of normal growth velocity and the significance of a decreased growth velocity at any stage of development
  - Recall the most common causes of short stature
  - Identify the importance of parental stature and pubertal development in the evaluation of a child with short stature
- Precocious pubertal:
  - Recognize signs of telarche, pubarche and gynecomastia
  - Recall the difference between pseudopuberty and true precocious puberty
  - Recall the etiology of true/complete precocious puberty
- Delayed puberty (see Adolescence):
  - Recall the natural history of constitutional delayed puberty
  - Recognize the pathological causes of delayed puberty
- Obesity (see Nutrition)
  - Identify risk factors and parameters used in defining the metabolic syndrome in children
  - Recall the causes of the metabolic syndrome
- Recall the most common causes of endocrine conditions: polyuria, a thyroid enlargement, hypoglycemia in the various age groups and the basic etiologies of rickets.
- Identify the clinical signs suggestive of hyper or hypothyroidism and hypocalcemia at all ages.
- Recall the presentation and natural history of type 1 diabetes.
- Diabetes Mellitus:
  - Recognize the presentation and natural history of type 1 diabetes.

### Skills

#### **Be able to:**

- Use growth charts to distinguish between constitutional short stature, genetic (familial) short stature, short stature related to chronic diseases, and short stature related to genetic, chromosomal, and syndromic causes.
- Assess accurately sexual maturity using SMR (Sexual Maturity Rating) stages.
- Distinguish between the variations of normal (e.g., telarche, pubarche) and precocious puberty.

- Obtain an accurate history of the timing of any signs of pubertal development and detect any abnormal sequence of changes.
- Identify signs that may be associated with endocrine disease (e.g., hirsutism, hypertension).
- Interpret bone age in relation to growth and pubertal development.
- Use laboratory tests appropriately according to presence or absence of physical signs.
- Differentiate between baseline and stimulated hormone values.
- Communicate effectively with patients (i.e., age appropriate) and their parents.
- Refer a patient to endocrinologist when necessary.

## ■ GASTROENTEROLOGY AND HEPATOLOGY

### Knowledge and understanding

#### General

- Recognize the specific signs and symptoms of dehydration, electrolyte imbalance and acid/base imbalance.
- Recognize conditions which require urgent intervention (e.g., appendicitis, intussusception, pyloric stenosis, hemolytic uremic syndrome, GI bleeding)
- Recognize the following specific gastrointestinal conditions, providing appropriate management on primary care level:
  - **Abdominal pain:**
    - Recall the etiologies of acute and recurrent abdominal pain in children at different developmental ranges
    - Recall that appendicitis is an important cause of acute abdominal pain and is the most common condition requiring emergency surgery
    - Identify possible biological, psychological, and social contributing factors for chronic or recurrent abdominal pain
  - **Constipation/encopresis:**
    - Identify simple constipation and those caused by organic disease (e.g., Hirschsprung disease, motility disorders and others) in the newborn period and beyond
    - Recognize the importance of knowing the timing of onset and the relevance of predisposing conditions (e.g., celiac disease, hypothyroidism, neurodisability, psychosocial problems)
    - Recognize the signs and symptoms of fecal overflow incontinence
  - **Vomiting:**
    - Recall the etiologies of acute vomiting (e.g., pyloric stenosis, food allergy, acute gastroenteritis, systemic illness) and chronic vomiting (cyclic vomiting, peptic disease, anatomical abnormalities in the gut, celiac disease and inflammatory bowel disease)
    - Recognize the specific signs and symptoms of dehydration, electrolyte imbalance and acid/base imbalance
    - Recognize that regurgitation is physiologic in a significant number of infants
    - Differentiate between rumination and regurgitation
  - **Diarrhea:**
    - Recall the common etiologic agents of infectious diarrhea in children
    - Recognize that colitis in a breast-fed infant is a possible manifestation of food allergy secondary to allergens in the mother's diet
    - Identify that extremely low fat diets, sorbitol, fruit juices, and excessive water consumption and fecal impaction may produce diarrhea

□ **Hepatomegaly/jaundice:**

- Recall the underlying etiology and pathology of hepatomegaly in inflammatory/infectious hepatitis (e.g., viral hepatitis, autoimmune hepatitis) metabolic disorders, tumors, liver cirrhosis and portal hypertension
- Recognize age-related changes of the liver during physical examination
- Remember that neonatal sepsis, congenital hypothyroidism, breast milk and breast-feeding failure (suboptimal intake or starvation related) are possible causes of hyperbilirubinemia detected in primary care
- Recognize that breast-milk jaundice is due to unconjugated hyperbilirubinemia and not to conjugated hyperbilirubinemia

□ **Other disorders:**

- Recall the age-related etiologies for gastrointestinal bleeding: vomiting with bright red blood and rectal bleeding
- Recognize the symptoms of complications of gastroesophageal reflux (e.g., poor growth, pain, anemia, dystonic movements)
- Recall the different diagnosis for malabsorption at various ages
- Recognize that the diagnosis of celiac disease depends on serology, characteristic small intestinal histopathologic findings, and response to a gluten-free diet
- Identify the clinical manifestations of Inflammatory bowel disease: Crohn's disease and ulcerative colitis

## Skills

### Be able to:

#### *General*

- Conduct a detailed history including timing of introduction of various foods and the appearance of symptoms, growth curves, appetite, changes of bowel movements, and family history of gastrointestinal disorders.
- Perform a complete physical examination including weight and height percentages, evaluation of dehydration, anal examination, signs of malabsorption/malnutrition, signs of specific vitamin, mineral deficiency and signs of liver disease.
- Request and interpret general laboratory evaluation including stool culture and parasites, sedimentation rate (ESR), C-reactive protein (CRP), serology for celiac disease, fecal calprotectin, stool volume and electrolytes, sweat test and liver function tests.
- Utilize endoscopy, ultrasound, biopsy, barium enema and anal manometry when appropriate.
- Formulate an age-appropriate differential diagnosis for all of the symptoms obtained during history and physical examination.
- Assess and initiate management of patients presenting gastroenterological problems in primary care settings:

- Advise on dietary manipulation and electrolyte replacement in children with acute vomiting and acute diarrhea
  - Advise on dietary manipulation and behavioral intervention when necessary in children with constipation
  - Prescribe properly laxatives, stool softeners and lubricants
  - Manage mild and moderate gastro-esophageal reflux
  - Counsel parents about the foods in which gluten can be found
  - Prescribe proper management options (frequent breast-feeding, rooming-in, adequate maternal fluid intake) for breast-milk jaundice
  - Inform that antidiarrheal medications are contraindicated for children
- Consult with and refer to appropriate specialists as needed.

## ■ GENETICS

### Knowledge and understanding

- Identify the environmental factors which may affect prenatal development (e.g., role of folic acid and other nutritional supplements, maternal substance use, alcohol and drugs).
- Recall the most common abnormalities of chromosome number are trisomy conditions.
- Recall chondrodysplasias are the result of mutations in genes which are essential for skeletal development and growth.
- Identify the risks and cultural issues posed by consanguinity.

### Skills

#### Be able to:

- Detect features suggesting dysmorphic or genetic syndromes and associated anomalies (DiGeorge syndrome, Prader-Willi syndrome, Angelman syndrome, Turner syndrome, fragile X syndrome, Klinefelter syndrome).
- Detect and diagnose the prominent features of trisomy 13, 18, and 21 in a newborn infant.
- Obtain a detailed history of symptoms and signs present in affected members to determine the complete clinical spectrum.
- Consult with geneticists appropriately for both diagnosis and counselling to parents.



## ■ GYNECOLOGY

### Knowledge and understanding

#### *General*

- ☐ Recall hormonal and anatomical changes associated with pubertal development in girls.
- ☐ Recognize normal cycle duration, average blood loss, and duration of normal menstrual flow.
- ☐ Recall normal sexuality and sexual function.
- ☐ Identify common reasons for which sexually active adolescent males and females do not use contraceptives
- ☐ Identify forms of contraception available to adolescents.
- ☐ Recall drugs which are teratogenic and contraindicated during pregnancy.

#### *Specific disorders*

- ☐ Recognize etiology and understand the pathogenesis of:
  - Gynecologic acute and chronic abdominal pain
  - Vaginal discharge (e.g., trichomonas, candida, bacterial vaginosis, and foreign body)
  - Abnormal patterns of uterine bleeding
  - Amenorrhea
  - Dysmenorrhea

### Skills

#### **Be able to:**

- ☐ Perform a complete gynecologic history including menstrual, obstetric, sexual, and relevant family and social history.
- ☐ Conduct an appropriate private, confidential history when more accurate information about sexual behaviors and/or abuse is needed.
- ☐ Formulate differential diagnoses for common gynaecological problems.
- ☐ Consider pregnancy in differential diagnosis of amenorrhea and vaginal bleeding whether or not there is a history of sexual intercourse.
- ☐ Use proper laboratory and diagnostic studies in an initial approach to gynaecological disorders.
- ☐ Detect the physical findings of pregnancy.
- ☐ Plan the appropriate initial management and refer appropriately for further management.
- ☐ Counsel adolescents regarding responsible sexual behaviors to prevent unintended pregnancy and sexually transmitted infections (STIs).
- ☐ Detect misconceptions about the use of contraceptives.
- ☐ Know the options for post-coital contraception for the female rape victim and recognize when they should be used.

## ■ HEMATOLOGY

### Knowledge and understanding

#### *General*

- Recognize the signs of common hematologic disorders.
- Identify features in the presentation which suggest serious pathology, inheritance patterns or child abuse.

#### *Specific disorders*

- Erythrocyte disorders:
  - Recognize the normal variation in hemoglobin concentration, and mean corpuscular volume during childhood, by age and gender
  - Recall the causes of iron deficiency anemia including poor diet, drinking of large amounts of cow's milk, bleeding and malabsorption
  - Recognize population and ages at risk for developing iron deficiency anemia
  - Recall iron deficiency may be associated with later cognitive deficits, apathy, irritability, and behavior and learning disturbances
  - Recall that vitamin B<sub>12</sub> or folate deficiency is a cause of macrocytic anemia and may present with neurologic symptoms including ataxia and parasthesias
  - Recognize that jaundice, dark urine, and a sudden change in exercise tolerance may indicate a hemolytic anemia (e.g., spherocytosis)
  - Recall that children with sickle cell disease are particularly susceptible to death from overwhelming bacterial sepsis and require early evaluation and treatment when febrile
  - Recognize pallor, jaundice, and splenomegaly as signs of autoimmune hemolytic anemia in children
  - Identify systemic illnesses that may manifest as anemia (e.g., chronic renal failure, ulcerative colitis, celiac disease, chronic liver disease)
  - Identify the signs of polycythemia in the newborn and in childhood
- Leukocyte disorders:
  - Recall the causes of leukocytosis, neutropenia, lymphopenia, lymphocytosis, eosinophilia, monocytosis, and monocytopenia
  - Recognize that recurrent bacterial infections may be a manifestation of quantitative or qualitative leukocyte disorders
  - Recognize clinical signs of abnormal leukocyte function (e.g., periodontal disease, perirectal ulceration, delayed umbilical cord separation)
- Platelet disorders:
  - Recognize that thrombocytopenia or functional platelet disorders may cause bruising, petechiae, epistaxis, or gastrointestinal bleeding, but rarely cause deep muscle or joint bleeding
- Coagulation disorders:
  - Recognize that the first manifestation of von Willebrand disease in girls may be heavy menstrual bleeding
  - Recall that bleeding in a coagulopathic patient into an enclosed space, such as the skull, chest, or fascial compartment, is an emergency
  - Recall intramuscular vaccination in children with coagulation disorders is safe and effective and the risk of significant bleeding is minimal if certain guidelines are followed

## Skills

Be able to:

### General

- Interpret a complete blood count: platelet count, total leukocyte and a leukocyte differential, red blood cell indices and reticulocyte count.
- Utilize and interpret coagulation test (prothrombin time and partial thromboplastin time), factor levels and bleeding time to establish a diagnosis of a bleeding disorder.

### Specific disorders

- Erythrocyte disorders:
  - Determine severity of anemia through interpretation of hemoglobin and hematocrit level
  - Determine reticulocyte production index (RPI), which corrects reticulocyte count for degree of anemia, to indicate whether the bone marrow is responding appropriately
  - Select investigations to determine the type of anemia
  - Differentiate between iron deficiency and thalassemia traits
  - Perform a therapeutic trial of iron as it is the best diagnostic study for iron deficiency in an otherwise healthy child, provided the response is documented
  - Prescribe appropriate treatment to correct iron deficiency anemia and counsel parents and menstruating females about preventing dietary iron deficiency
  - Advise on appropriate vaccines in a child with hemolytic anemias and hemoglobinopathies
- Leukocyte disorders:
  - Interpret neutropenia, an absolute neutrophil count (ANC)  $<1500/\mu\text{L}$ , although neutrophil counts vary with age
- Platelet disorders:
  - Interpret thrombocytopenia (platelet count  $<150,000/\text{mm}^3$ )
  - Order a platelet count to check for thrombocytopenia in the presence of a rapidly enlarging hemangioma
- Coagulation disorders:
  - Advise families of a child with a coagulation or bleeding disorder regarding physical activities and sports participation

## ■ INFECTIOUS DISEASES

### Knowledge and understanding

- Recognize the epidemiology and pathogenic patterns of infectious diseases (the common ones in primary care, **Annexe 1**).
- Recall the common infectious diseases that are identifiable and the recommended control measures, and the immediate steps to take in event of a disease outbreak.
- Identify the possible causes of fever of unknown origin (FUO).
- Recall the most common pathogens causing fever without source in infants, toddlers, and children.
- Recognize indications and prescribe appropriate anti-microbials for therapy and prophylaxis.
- Recognize the rational use of antibiotics with a view to minimizing abuse and development of resistance.

### Skills

Be able to:

#### *General*

- Perform a relevant focused history, recognizing the symptoms and signs suggestive of an infectious disease.
- Identify different fever patterns.
- Undertake a focused clinical examination and interpret the signs and symptoms.
- Recognize pathognomonic signs of infections.
- Perform a valid, targeted, and time efficient examination relevant to the presentation and risk factors.
- Formulate a differential diagnoses of many infectious diseases under the purview of the general paediatrician based on physical findings and using appropriate diagnostic tests.
- Select and interpret the appropriate investigations helpful for establishing a differential diagnosis.
- Recognize features in the clinical presentation or investigation findings which suggest serious pathology.
- Follow local and national guidelines on notification of infectious diseases.
- Treat appropriately active infections in children.
- Plan the use of vaccination in the control of the infection and the use of chemoprophylaxis for the contacts of patients if necessary.
- Counsel families appropriately regarding treatments, and about prevention and recognition of infections.
- Involve the multi-disciplinary team and other professionals when appropriate.

**Specific disorders**

- ☐ Septic shock:
  - Identify symptoms consistent with septic shock, and that symptoms may vary with age
  - Lead the team when initiating resuscitation and treatment
- ☐ Public health considerations: prevention of infectious diseases (see also Preventive Paediatrics):
  - In childcare centers, advise on childcare exclusion criteria (positive or negative) for infections in children
  - Advise on absolute and relative contraindications to breastfeeding
  - Implement the recommendations for screening for infectious diseases in internationally adopted children

**Annexe 1: Common Pathogens in Primary Care**Common **viral** pathogens in primary care

<input type="checkbox"/> Varicella zoster	<input type="checkbox"/> Roseola
<input type="checkbox"/> Herpes simplex virus	<input type="checkbox"/> Parvovirus B19
<input type="checkbox"/> Measles (rubeola), mumps and rubella	<input type="checkbox"/> Respiratory syncytial virus
<input type="checkbox"/> Rotavirus	<input type="checkbox"/> Hepatitis viruses (A, B, C)
<input type="checkbox"/> Enteroviruses	<input type="checkbox"/> Human papillomavirus
<input type="checkbox"/> Rhinovirus	<input type="checkbox"/> Cytomegalovirus
	<input type="checkbox"/> Epstein Barr virus
<input type="checkbox"/> Influenza, Parainfluenza virus	–

Common **bacterial** pathogens in primary care

<input type="checkbox"/> Anaerobes	<input type="checkbox"/> Escherichia coli
<input type="checkbox"/> Campylobacter species	<input type="checkbox"/> Neisseria gonorrhoeae (gonococcal infections)
<input type="checkbox"/> Bartonella henselae (cat-scratch disease)	<input type="checkbox"/> Hemophilus influenza
<input type="checkbox"/> Chlamydia infections	<input type="checkbox"/> Helicobacter pylori
<input type="checkbox"/> Corynebacterium diphtheriae (diphtheria)	<input type="checkbox"/> Borrelia burgdorferi (Lyme disease)
<input type="checkbox"/> Neisseria meningitidis (meningococcal infections)	<input type="checkbox"/> Shigella species (shigellosis)
<input type="checkbox"/> Mycobacterium tuberculosis	<input type="checkbox"/> Staphylococcus aureus (see also Dermatology)
<input type="checkbox"/> Mycoplasma pneumonia	<input type="checkbox"/> Streptococcus agalactiae (group B streptococcus)
<input type="checkbox"/> Bordetella pertussis	<input type="checkbox"/> Streptococcus pneumonia (pneumococcal infections)
<input type="checkbox"/> Pseudomonas species	<input type="checkbox"/> Streptococcus pyogenes (group A streptococcus)
<input type="checkbox"/> Salmonella species	<input type="checkbox"/> Yersinia enterocolitica

Common **fungal** pathogens in primary care

<input type="checkbox"/> Candida species
--

Common **parasitic** pathogens in primary care

<input type="checkbox"/> Giardia lamblia (giardiasis)	<input type="checkbox"/> Entamoeba histolytica and dispar (amebiasis)
<input type="checkbox"/> Toxoplasma gondii (toxoplasmosis)	<input type="checkbox"/> Taenia solium, Taenia saginata, Taenia asiatica
<input type="checkbox"/> Enterobius vermicularis (pinworms)	<input type="checkbox"/> Leishmania
<input type="checkbox"/> Ascaris (ascariasis)	–

## ■ IMMUNOLOGY

### Knowledges and understanding

#### *General*

- ☐ Recall the basic immunology required in clinical practice and the development of the immune system with age.
- ☐ Recall the pathophysiology of common disorders affecting the immune system.
- ☐ Recognize symptoms that may be suggestive of an immune disorder or dysfunction: recurrent infections, rashes or joint pain.
- ☐ Recognize the importance of the effect of viral infections in causing immunodeficiency.
- ☐ Recall the broad range of treatments used in immune disorders.

#### *Specific disorders*

- ☐ Immune deficiency disorders.
- ☐ Recall the classification of immune-deficiencies.
- ☐ Recognize which children justify investigation for immune deficiency (e.g., family history, single infection with unusual organism, multiple infections).
- ☐ Recall which medications may be associated with suppression of the immune response.
- ☐ Recognize the effect of malnutrition and disease on immune development.

### Skills

Be able to:

#### *General*

- ☐ Take a relevant focused history, recognizing the symptoms and signs suggestive of an underlying immune disorder.
- ☐ Undertake a focused clinical examination and interpret the signs and symptoms.
- ☐ Formulate a differential diagnosis based on physical findings and using appropriate diagnostic tests.
- ☐ Counsel families appropriately regarding treatments.
- ☐ Consult with specialists appropriately about management.
- ☐ Involve the multi-disciplinary team and other professionals when appropriate.

#### *Specific disorders*

- ☐ Immune deficiency disorders:
  - Determine factors that differentiate between primary and secondary disorders
  - Detect the clinical characteristics of cellular immunodeficiency present in the first few months after birth (e.g., failure to thrive, chronic diarrhea, overwhelming infections with viral, bacterial, and/or opportunistic infections)

- Detect clinical characteristics of antibody deficiency syndromes after 4 to 6 months of age (e.g., severe first infections and/or chronic and recurrent bacterial infections in more than one anatomic site)
- Care of the immune-compromised child:
  - Advise parents on an appropriate immunization schedule
  - Counsel parents about prevention and recognition of infections
  - Prescribe appropriate treatment for active infection and prophylactic treatments

## METABOLISM

### Knowledge and understanding

#### General

- Identify current newborn screening for inborn error in the area.
- Recognise common clinical presentations of metabolic disease including encephalopathy, seizures, neurodevelopmental delay or regression, muscle weakness, learning difficulties, vomiting, failure to thrive, jaundice and hypoglycemia.
- Recall principles of dietary treatment of metabolic disorders.

#### Specific disorders

- Disorders of amino-acid metabolism:
  - Recognize the importance to check results of phenylketonuria screening in any child presenting with neurodevelopmental delay
- Disorders of carbohydrate metabolism:
  - Recall children with galactosemia become sick soon after ingesting milk
  - Remember children with fructose intolerance usually present symptoms during weaning as breast milk and most infant formulae do not contain fructose
  - Recall children with glycogen storage diseases may present predominantly with problems related to the liver (e.g., hypoglycemia, hepatomegaly, or liver dysfunction) or muscle (e.g., poor exercise tolerance, rhabdomyolysis)
  - Recognize the role of liver or muscle biopsy in establishing a diagnosis of a glycogen storage disease
- Disorders of lipid and lipoprotein metabolism:
  - Recall detection of dyslipidemia or early onset of cardiovascular disease in parents may be an indication for children to be screened
- Other disorders:
  - Recall lysosomal storage diseases should be considered in any child presenting with neurodevelopmental regression or coarsening of facial features
  - Recall fatty acid oxidation defect should be considered in any child presenting with fasting or illness induced hypoketotic hypoglycemia

### Skills

#### Be able to:

#### General

- Elicit the common signs seen in metabolic disease (e.g., visceromegaly, rickets, neurodevelopmental delay, seizures, dysmorphic features).
- Manage timely and effective referral to specialists for patients at risk of, or presenting a metabolic disorder.



- Work collaboratively with dietitians and metabolic specialists to plan for the chronic management.
- Work collaboratively with a range of other specialists to provide long term care of complications from inborn metabolism errors.
- Work with others in providing support in the community (e.g., special diets or avoidance of factors which may precipitate symptoms).
- Refer the family of a child with a metabolic disease for genetic counseling when necessary.

## MUSCULOSKELETAL DISORDERS

### Knowledge and understanding

#### General

- Recall normal stages in musculoskeletal growth and gait development in childhood.
- Recognize the most common signs and symptoms of musculoskeletal disorders in childhood and identify their most frequent causes.
- Recall the association of musculoskeletal disorders with specific medical conditions and treatments (drugs) and recognize the possible association of musculoskeletal disorders in childhood with neuromuscular diseases.

#### Specific disorders

- Identify risk factors, natural history, clinical manifestations and therapeutic plan of musculoskeletal disorders in childhood at different stages of development:
  - Dysplasia and subluxation of the hips, coxa valgus, coxa vara, leg length discrepancy, femoral anteversion, tibial torsion
  - Feet disorders: Clubfoot, equinovarus, plano valgus, metatarso valgus, varus
  - Scoliosis, kyphosis, torticollis
  - Avascular necrosis (Legg-Calve-Perthes disease), apophysitis, slipped capital femoral epiphysis (SCFE)
- Recall differential diagnosis between acquired musculoskeletal disorders: osteomyelitis, pyogenic arthritis and toxic synovitis.
- Recognize clinical manifestations of trauma conditions: dislocation, pronatio dolorosa antebrachii, sprains, deformities with common fractures in childhood.
- Recall risk factors and manifestation of metabolic bone disease: vitamin D deficiency, rickets and osteoporosis.

### Skills

#### Be able to:

#### General

- Perform a complete musculoskeletal examination of spine, hips, and all the joints of the limb.
- Distinguish the difference between non-specific musculoskeletal pain and pain from serious causes.
- Differentiate the musculoskeletal conditions that may be a normal stage in development or may reflect underlying pathologic conditions.
- Use and interpret the main complementary test to diagnosis the common childhood musculoskeletal disorders: X-ray, ultrasound test.

- Provide a therapeutic plan, use of analgesic, anti-inflammatory, gastroprotective treatment, immobilization, appropriated emergency treatment and physiotherapeutic exercises.
- Perform recommendations in the well child visits to prevent musculoskeletal problems in the development of the child.
- Consult or refer to a specialist such as orthopedic surgeon, physiotherapist, orthopedist and rheumatologist and collaborate with them for diagnosis and treatment.

***Specific disorders***

- Perform the diagnostic maneuvers and recognize the clinical signs of developmental dysplasia of the hip.
- Establish a differential diagnosis of lameness in function of age and accompanying symptoms.
- Formulate a differential diagnosis and a plan of management for back pain in children and adolescents.
- Interpret the early clinical findings and provide therapeutic plan in osteomyelitis, pyogenic arthritis and toxic synovitis.
- Prevent vitamin D deficiency and use of biochemical investigations and radiological features for differential diagnosing from other causes of rickets.

## ■ NEPHROLOGY

### Knowledge and understanding

#### *General*

- Recall the common causes, signs and symptoms of proteinuria, hematuria, pre-renal acute renal failure, polyuria and arterial hypertension.
- Recognize that the pathological renal entities can be symptoms or may be associated with systemic diseases.
- Recognize the impact of kidney function on growth, nutritional status, bone metabolism, and hemoglobin levels.
- Identify the importance of family history for hereditary kidney diseases (e.g., persistent microscopic hematuria).
- Recall the indications for urinalysis, urine culture, and basic tests to assess kidney function.
- Recognize the special value of ultrasonography and imaging modalities and its limitations.
- Recall drugs that are nephrotoxic.

#### *Specific disorders*

- Recall the etiology of dysuria (vaginitis, chemical irritation, urinary tract infection, sexual activity and trauma).
- Recall the bacteriology and epidemiology of urinary tract infection: differentiate cystitis and pyelonephritis.
- Recall the physiology and pattern of normal voiding and bladder capacity and the diseases causing abnormal voiding.
- Identify primary and secondary enuresis.
- Recall the commonest forms of acute glomerulonephritis: idiopathic, postinfectious, and in systemic disease.
- Identify intermittent hematuria as the most common sign of IgA nephropathy.
- Recognize the principal metabolic diseases (diabetes, Wilson's disease, oxalosis, and cystinosis) and systemic diseases (lupus erythematosus, leukemia, and amyloidosis) with kidney involvement.
- Identify hemolytic-uremic syndrome, as the most common cause of acute renal failure in children.
- Recognize renal manifestations and the different degrees of renal involvement of the Henoch-Schönlein purpura.
- Recall the natural history of vesicoureteral reflux.

## Skills

### Be able to:

- ☐ Complete a detailed voiding history.
- ☐ Conduct a full examination including
  - Hydration status, somatic growth parameters, and blood pressure
  - Early edema, ascites, pleural effusion, a palpable or distended bladder and a weak urinary stream
  - Perineal and genital inspection
  - Systemic diseases (e.g., skin alterations, vasculitis, arthritis, pulmonary symptoms) and dysmorphic features associated with renal diseases
- ☐ Formulate and interpret the basic diagnostic investigations, urinalysis and microbiology findings in the urine.
- ☐ Interpret blood pressure in different age groups.
- ☐ Guide the diagnose and perform therapeutic orientation of the most common pathological renal entities.
- ☐ Plan the appropriate initial management and follow-up management of recurrent urinary tract infection and primary enuresis.
- ☐ Refer for more detailed studies to paediatric nephrologist/urologist when necessary.
- ☐ Counsel parents and children appropriately regarding long term issues.

## ■ NEUROLOGY

### Knowledge and understanding

#### *General*

- Recognize acute and chronic focal neurological signs.
- Recall the implications of acute focal neurological signs and those that should prompt immediate neuroimaging.
- Identify which historical and physical findings should lead to consideration of child abuse as a cause of an altered level of consciousness.
- Identify ingestions and intoxications likely to result in neurologic toxicity.
- Recall the common causes of disability.
- Identify multidisciplinary resources to provide the best care for children with neurologic and neuro-disabling conditions.

#### *Specific disorders*

- Seizures:
  - Recall diagnostic criteria of febrile seizure and the risk factors related to later epilepsy
  - Recognize which drugs may precipitate or exacerbate seizures
  - Identify the medications that can be administered rectally to treat status epilepticus
- Headache:
  - Recall the pathophysiology and common causes of headaches
  - Recognize the possible biological, psychological, and social factors that can contribute to headache
  - Recognize the difference between paediatric migraines and adult migraines
- Other neurological disorders:
  - Recall the common causes of ataxia (e.g., post-infectious, genetic, cerebral palsy, and benign paroxysmal vertigo)
  - Recall the common causes of involuntary movement and movement disorders (including chorea, dystonia, myoclonus, tics, tremor)
  - Recall the common causes of hydrocephalus, macrocephaly and microcephaly
  - Recall the common causes of weakness and hypotonia
  - Recognize the range of disabilities associated with cerebral palsy
- Meningitis and Encephalitis:
  - Recall the etiologies and recognize the signs of meningitis in neonates, children, and adolescents

## Skills

### Be able to:

- Execute an accurate neurologic history.
- Examine the nervous system of a newborn baby, child, and adolescent.
- Perform a reliable assessment of neurodevelopmental status at key stages, including the newborn period, the first year of life, nursery age, school entry, and late primary education.
- Interpret abnormal neurological signs.
- Form a differential diagnosis of the child with suspected neurological disorder.
- Make appropriate use of neuroradiologic imaging and neurophysiologic tests.
- Manage simple cases of developmental disorders.
- Explain diagnosis and prognosis to parents.
- Plan the appropriate initial management and follow-up management.
- Identify the impact of developmental disorders on the life of child and family at different developmental stages.
- Consult effectively with specialists arranging timely and appropriate referral.
- Locate self-help and support groups and refer parents and children to them.
- Demonstrate a commitment to advocacy on behalf of disabled children and their families.

### *Specific disorders*

- Seizures:
  - Distinguish between epileptic seizures and paroxysmal non-epileptic events (e.g., breath-holding, tics, self-stimulation, syncope, gastroesophageal reflux, pseudoseizures, sleep disturbances)
  - Provide appropriate counseling regarding activities and behavior of a child with a seizure disorder (e.g., athletics, school, driving, medications)
- Movement disorders:
  - Use video in assessing a patient with a movement disorder when symptoms are episodic
- Microcephaly/macrocephaly:
  - Measure head circumference accurately
  - Plot and interpret a head growth chart
  - Identify normal and abnormal variations in head shape
- Meningitis encephalitis:
  - Ensure prophylactic therapy for contacts of meningitis

## ONCOLOGY

### Knowledge and understanding

- ☐ Recognize that signs and symptoms of cancer are variable and non-specific in paediatric patients.
- ☐ Recall that hematopoietic malignancies (leukemia, lymphoma) are the most common childhood cancers.
- ☐ Recognize the variability in the age-specific incidence of childhood cancers and the difference in incidence of childhood cancer in different ethnic groups.
- ☐ Recognize that general malignant masses are firm, fixed, and non-tender in contrast to infectious or inflammatory lumps.
- ☐ Recognize that some children have a genetic susceptibility to cancer and should be screened appropriately.
- ☐ Identify the common cancers occurring in your locality.

### Skills

#### Be able to:

- ☐ Detect symptoms associated with the most common manifestations of childhood cancers (e.g., leukemias, lymphomas, brain tumors, solid tumors, soft tissue sarcomas and bone tumors)
  - Pain, cachexia, pallor, and/or respiratory distress
  - Measure palpable masses
  - Lymphadenopathy and organomegaly
  - Rashes, bruises, and petechiae
  - Neurologic and ophthalmologic examinations when headache or vomiting is present
- ☐ Discriminate predisposing or risk factors for development of selected childhood cancers (e.g., exposure to ionizing radiation or chemotherapy, race, family history, infections, immunodeficiency, and congenital anomalies).
- ☐ Perform initial screening tests for common malignancies.
- ☐ Detect and rule out the infections that masquerade as a potential malignancy.
- ☐ Differentiate benign tumors that can be confused with childhood malignancies.
- ☐ Work effectively with specialist nurses and members of palliative care teams.
- ☐ Educate children and parents regarding means of preventing cancer such as immunization against hepatitis B and human papilloma virus.
- ☐ Encourage healthy life style very early to reduce risk of cancer (e.g., avoidance of tobacco and alcohol, high fat diets, and obesity).



## ■ OPHTHALMOLOGY

### Knowledge and understanding

#### *General*

- Identify the critical periods in development of visual function and binocular vision.
- Recognize the periods of critical and plastic visual development.
- Recall the common and preventable causes of visual impairment.
- Recognize that central nervous system disorders are the most common cause of visual impairment.
- Identify the common causes of red eye.
- Recall refractive errors and their correction.
- Identify educational approaches and recognize support at school and other resources for children with visual impairments.

#### *Specific disorders*

- Alignment and movement disorders (including strabismus, amblyopia, nystagmus, ptosis):
  - Recall the terminology used in describing strabismus (e.g., convergent/divergent, latent/manifest, incomitant/comitant)
  - Recognize the importance of the early detection of strabismus to prevent amblyopia and the importance of refraction correction in children with alignment and movement disorders
  - Recall the management of amblyopia with visual correction, patching and surgery when is needed
- Orbital and periorbital (preseptal) cellulitis:
  - Recall the microbiology, predisposing factors and pathogenesis of orbital and periorbital cellulitis
  - Identify that orbital cellulitis is an ophthalmologic emergency and may cause visual and/or life-threatening complications
- Conjunctivitis and uveitis:
  - Recall the microbiology of conjunctivitis in neonates and older children
  - Recognize signs of conjunctivitis and uveitis
- Recall the common causes, signs and symptoms of styte, chalazión, and nasolacrimal duct obstruction/dacrocystitis.
- Recall the causes of primary and secondary cataracts and childhood glaucoma.
- Trauma (including foreign bodies, corneal abrasions):
  - Recognize the association between the use of contact lenses and corneal abrasions.
  - Recognize that although corneal abrasions may be seen with an ophthalmoscope, slit lamp examination with fluoroscopy may give more information.

## Skills

Be able to:

### *General*

- ☐ Elicit a relevant history for a child with suspected visual impairment including prenatal, birth and developmental history, drugs, family history, and educational concerns.
- ☐ Examine the eye of a child.
- ☐ Identify symptoms that suggest a child may have a visual impairment.
- ☐ Form a differential diagnosis of the child with suspected visual impairment and/or eye disease.
- ☐ Provide treatment for common eye diseases.
- ☐ Identify abnormalities requiring urgent treatment.
- ☐ Consult and refer effectively to an ophthalmologist.

### *Specific disorders*

- ☐ Alignment and movement disorders:
  - Perform a cover test
  - Accurately describe the type of strabismus
  - Distinguish between pseudo-strabismus and true strabismus
- ☐ Nasolacrimal duct obstruction/dacrocystitis:
  - Differentiate between nasolacrimal duct obstruction and dacrocystitis
- ☐ Conjunctivitis and uveitis:
  - Distinguish between allergic and infectious conjunctivitis
  - Advise on methods of prevention of conjunctivitis (e.g., neonatal prophylaxis, hand washing)
- ☐ Trauma (including foreign bodies, corneal abrasions):
  - Obtain an accurate history of the type and timing of trauma
  - Remove foreign bodies

## ■ OTOLARYNGOLOGY

### Knowledge and understanding

#### *General*

- Recall congenital anomalies and the syndromes associated with the ear-nose-throat (ENT) system.
- Recognize bacteriology, epidemiology and pathogenesis of acute and chronic ENT diseases.
- Recall appropriate treatment options for ENT diseases.

#### *Specific disorders*

- Ear:
  - Recognize predisposing factors for otitis media with effusion in children (ie: recurrent otitis media may be due to drinking from the bottle in lying position)
  - Identify pneumatic otoscopy as the preferred generally available method of diagnosis middle ear effusion
  - Recognize indications for myringotomy and insertion of ventilation tubes (grommets)
  - Recall the complications of middle ear disease (e.g., perforation of the tympanic membrane, acquired cholesteatoma, tympanomastoiditis, tympanosclerosis, CNS complications)
  - Recall etiology of referred pain to the ear
  - Recognize the conditions that contribute to conductive and/or sensorineural hearing loss in children
  - Recall the techniques for hearing evaluation at different ages
  - Recognize the clinical presentation of benign paroxysmal vertigo and acute mastoiditis
- Nose and nasopharynx
  - Recall infectious agents responsible for acute tonsillitis complications (peritonsillar abscess, retropharyngeal abscess)
  - Identify the conditions associated with nasal polyps in children
  - Recognize the natural history of adenoidal hypertrophy, of tonsillar enlargement and the indications for tonsillectomy and adenoidectomy
  - Recognize the use and limitations of a lateral soft tissue x-ray, nasopharyngeal endoscopy and the use of sleep study monitoring in the evaluation of adenoidal hypertrophy
- Sinuses:
  - Recall the natural history of the development of the maxillary, ethmoid, and frontal sinuses and the ages at which sinusitis is more likely to occur
  - Recognize the potential serious consequences of ethmoiditis and frontal sinusitis
- Larynx:
  - Recall croup scores
  - Recognize epiglottitis as a potentially lethal condition
- Neck:
  - Recall causes of acute and chronic cervical lymphadenopathy
  - Recall causes of neck masses not associated with enlarged cervical lymph nodes (e.g., thyroglossal duct cysts, cystic hygroma, branchial cleft cysts, enlarged thyroid, thyroid masses)

## Skills

Be able to:

### *General*

- Elicit the symptoms and the signs of acute and chronic ENT disease and formulate a differential diagnosis.
- Perform the appropriate examination of the external, middle ear, nose and pharynx and interpret the signs.
- Select appropriate diagnostic tests.
- Develop a management plan and provide appropriate supportive and antimicrobial therapy when indicated.
- Refer appropriately to an otolaryngologist as needed.
- Provide effective collaborative care with patient, family, and specialists as appropriate.

### *Specific disorders*

- Ear
  - Prescribe appropriate prophylaxis for children with otitis externa who swim frequently
  - Detect warning signs from the history and elicit any risk factors that may have predisposed to the development of hearing loss
  - Detect a foreign body in the external ear canal
- Nose and nasopharynx:
  - Identify a hematoma if present of the nasal septum
  - Evaluate a child with epistaxis
  - Detect a nasal foreign body
- Pharynx:
  - Take a throat swab to identify tonsillar infection if indicated
  - Elicit symptoms suggestive of peritonsillar abscess, retropharyngeal abscess
- Larynx:
  - Distinguish between laryngomalacia and other causes of stridor
  - Rule out more serious diagnoses such as vascular ring or tumors
  - Elicit a history suggestive of inhalation of a foreign body
  - Integrate physical signs on observation suggestive of epiglottitis
- Neck:
  - Perform an appropriate examination of the masses neck

## ■ ORAL AND DENTAL

### Knowledge and understanding

#### *General*

- ☐ Recall the number of primary and permanent teeth and the disturbances in number, shape, eruption and shedding of teeth.
- ☐ Recognize the risk factors for the development of caries and dental erosions.
- ☐ Recall the principles of therapy for oral lesions and tumors.
- ☐ Identify when consultation and/or referral is appropriate.
- ☐ Recognize how to effectively collaborate with specialists and the family in treating these conditions.

#### *Specific disorders*

- ☐ Recall the natural history, symptoms and therapeutic options of:
  - Primary herpetic gingivostomatitis
  - Gingivitis
  - Oral candidiasis (thrush)
  - Oral and peri-oral tissue lesions
  - Congenital anomalies (natal and neonatal teeth, maxillary lip frenulum, ankyloglossia)

### Skills

Be able to:

#### *General*

- ☐ Perform a complete clinical oral examination including teeth.
- ☐ Implement a diagnosis of common childhood oral/dental problems.
- ☐ Identify disturbances in number, shape, eruption and shedding of teeth at the appropriate age of the child.
- ☐ Interpret oral manifestations of general health problems.
- ☐ Manage common oral tissue lesions.
- ☐ Perform anticipatory guidance focused on oral health during well child visits.
- ☐ Provide recommendations in cases of chronic diseases.
- ☐ Refer to a dentist appropriately.

#### *Specific disorders*

- ☐ Implement a differential diagnosis for:
  - Primary herpetic gingivostomatitis
  - Candidiasis
  - Gingivitis
  - White soft tissue lesions: chemical burn, palatal cysts of the newborn (Epstein's pearls, Bohn's nodules), gingival cysts of the newborn

- Dark soft tissue lesions: erythematous candidiasis, eruption hematoma and cyst, physiologic pigmentations, epulides
- Ulcerative lesions: aphthous ulcer, secondary herpetic ulcer, angular cheilitis, traumatic ulcer
- Acute inflammatory lesions: abscess, cellulitis, mucocoele, ranula
- Tumor and tumor like lesions: hemangioma, lymphangioma congenital epulis.
- Detect dental trauma, dental caries and erosion and anomalies of the teeth:
- Replant a permanent tooth in case of tooth avulsion.
- Detect congenital anomalies (natal and neonatal teeth, maxillary lip frenulum, ankyloglossia):
  - Assess the clinical problems associated with a cleft palate and/or a cleft lip in children (e.g., feeding, speech, dental, hearing, middle ear disease)

## ■ RESPIRATORY

### Knowledges and understanding

#### *General*

- Recognize the effect of pulmonary disease on normal growth and development.
- Recall the epidemiology of local respiratory pathogens.
- Identify predisposing factors, biological and environmental, to the development of respiratory disease.
- Recognize that exercise intolerance may be a presenting symptom of chronic lung diseases but may also have a range of non-respiratory causes.
- Recognize that upper respiratory tract infection and airway obstruction in young infants lead to respiratory distress.
- Recall the normal respiratory rates for age and the variations that occur with sleep, eating, and activity in normal children.
- Recall the common causes of general respiratory signs and symptoms:
  - Stridor
  - Cough (acute and chronic)
  - Wheezing (see also asthma)
  - Tachypnea
  - Snoring or features of sleep obstruction

#### *Specific disorders*

- Upper airway:
  - Recall the risk factors and age groups at risk for foreign body aspiration
  - Recognize the typical clinical course of tracheomalacia and bacterial tracheitis
- Lower airway:
  - Recognize that although the majority of bronchiolitis are associated with respiratory syncytial virus a wide range of other viruses cause a similar clinical picture
  - Identify factors that predispose to severe symptoms in bronchiolitis
  - Identify the long-term pulmonary complications of aspiration syndromes: foreign body aspiration and gastroesophageal reflux
  - Recall the conditions which may predispose to the development of bronchiectasis
  - Recall the etiologies of pneumonia in children of different ages and which organisms are likely to cause the pleural and parenchymal complications of pneumonia
  - Recognize the importance of immunization status of a child with pneumonia
- Asthma:
  - Recall that asthmatic patients may have bronchial hyper-responsiveness to exercise, viral upper respiratory infections, allergen exposure, weather changes, smoke pollutants and other irritants, aspirin, and beta adrenergic blocking drugs
  - Recognize that children with early-onset asthma (<3 years of age) who have a parental history of asthma, a confirmed diagnosis of atopic dermatitis, or sensitization to aeroallergens are least likely to outgrow asthma

- Recall the pathophysiology of asthma, patterns of asthma and its treatment
- Recognize that exercised-induced asthma may be a sign of poorly controlled asthma
- Identify the kinetics of short- and long-acting inhaled beta-adrenergic agonists, the risks and benefits of inhaled corticosteroids and the role of leukotriene antagonists in the management of asthma
- Recognize the importance of self-assessment in a patient with asthma
- Recognize the importance of patient education in asthma management
- Cystic fibrosis:
  - Recall the pathogenesis, genetics and natural history of cystic fibrosis
  - Identify uses and shortcomings of various testing modalities for cystic fibrosis, including antenatal and neonatal screening
- Sudden infant death syndrome/acute life threatening events:
  - Recognize the risk factors for sudden infant death syndrome (unexpected infant deaths)
- Other disorders:
  - Recognize that otitis media, recurrent sinusitis, dextrocardia, and/or bronchiectasis may be due to primary ciliary dyskinesia
  - Recall presenting symptoms of vascular airway anomalies
  - Recall that spontaneous pneumothorax occur and may recur in young asthenic boys
  - Identify the association between scoliosis and restrictive pulmonary disease
  - Recall that pectus excavatum is not usually associated with pulmonary disease or exercise limitation

## Skills

Be able to:

### General

- Conduct a detailed history and detect features in the presentation which suggest serious or unusual pathology.
- Perform a complete examination of the upper airway and lungs.
- Formulate the differential diagnosis of acute and chronic respiratory problems in children of different ages and plan the initial screening evaluation.
- Order when is indicated and interpret the appropriate laboratory and radiologic tests: chest radiography.
- Measure and interpret peripheral oxygen saturation.
- Perform and interpret basic lung function tests (peak flow, spirometry).
- Assess and initiate age-appropriate management of patients presenting with respiratory problems in acute and outpatient settings.
- Undertake long term management of some chronic respiratory problems.
- Institute appropriate emergency treatment and ensure the child with asthma has access to emergency treatment at school and other settings.



- ☐ Work collaboratively with other specialists and refer those conditions that require specialty management.
- ☐ Implement methods of prevention.
- ☐ Initiate the appropriate supportive and familiar counseling.

***Specific disorders***

- ☐ Manage diagnosis scores for bronchiolitis.
- ☐ Classify asthma based on frequency and severity of symptoms.
- ☐ Institute age-appropriate individualized management plan for asthma.
- ☐ Teach children with asthma how to use a peak flow meter, asthma journal, and to assess inhaler technique.

## ■ RHEUMATOLOGY

### Knowledge and understanding

#### *General*

- Recall causes of joint swelling at single and multiple sites.
- Recognize common clinical presentations of a limp at different ages.
- Recognize normal patterns of leg alignment and foot posture at different ages (e.g., bow legs, knock knees, in-toeing, and flat feet).
- Recall the range of treatments used including steroids, other immunosuppressive agents, cytotoxic drugs, and biological therapies.
- Recognize the need for a comprehensive program for the management of rheumatologic disorders.

#### *Specific disorders*

- Systemic Lupus Erythematosus:
  - Recognize the spectrum of clinical presentations
- Vasculitis:
  - Identify the features in the history which suggest an underlying vasculitis
- Kawasaki disease:
  - Recall the criteria for making a diagnosis of Kawasaki disease and the importance of cardiologic investigation
- Henoch-Shönlein purpura (HSP):
  - Identify the typical and atypical presentations of HSP(See nephrology)
- Juvenile rheumatoid (idiopathic) arthritis (JIA):
  - Recognize major presentations of JIA (i.e., systemic, oligoarthritis, polyarthritis, psoriatic arthritis, enthesitis arthritis)
  - Recall common viral and bacterial infections that are associated with a reactive arthritis and post-infectious arthritis
- Periodic Fever Syndrome:
  - Recall the criteria for making the diagnosis of periodic fever syndrome
- Hypermobility syndromes (Ehlers Danlos and Marfan's):
  - Recall the relationship between hypermobility and joint complaints
  - Recognize the clinical features of benign hypermobility syndrome, Marfan's, and Ehlers Danlos syndrome
  - Recall the importance of taking a detailed family history

## Skills

Be able to:

### *General*

- ☐ Perform a focused history recognizing features that may suggest rheumatologic disorders (rash, fever, and lymphadenopathy).
- ☐ Elicit a history of disease associations of rheumatologic conditions.
- ☐ Distinguish between inflammatory and mechanical conditions and functional pain.
- ☐ Recognize and manage benign causes of musculoskeletal pain (growing pains).
- ☐ Identify illnesses associated with arthritis and/or arthralgia syndromes (inflammatory bowel disease).
- ☐ Perform a musculoskeletal assessment.
- ☐ Select and interpret the appropriate investigations that are helpful in establishing a differential diagnosis (between traumatic, infectious, inflammatory, malignant, neurologic, or other causes).
- ☐ Prescribe appropriate analgesia.
- ☐ Involve multi-disciplinary team and other professionals in the care of children with musculoskeletal conditions.

### *Specific disorders*

- ☐ Demonstrate features of joint hypermobility using Beighton's criteria (Hypermobility syndromes Ehlers Danlos and Marfan's).

## UROLOGY

### Knowledge and understanding

#### *General*

- ☐ Recall the basics of voiding patterns and anomalies.

#### *Specific disorders*

- ☐ Recall the pathogenesis, etiology and the management of:
  - Cystitis
  - Neurogenic bladder
  - Congenital abnormalities:
    - Male: hypospadias, cryptorchidism, micropenis, phimosis and paraphimosis.
    - Female: imperforate hymen, labial adhesions
  - Acquired abnormalities:
    - Male: testicular torsion, orchitis/epididymitis, urethritis, balanitis, testicular masses, varicocele
    - Female: vulvovaginitis

### Skills

#### **Be able to:**

- ☐ Identify major genital malformation.
- ☐ Identify normal and abnormal physical findings of the urogenital system:
  - Male genital examination
    - Undescended testes and retractile testes
    - Differentiate testicular masses
    - Testicular torsion
    - Orchitis-epididymitis
    - Varicocele
    - Hypospadias
    - Phimosis and paraphimosis
  - Female genital examination:
    - Labial adhesions
    - Imperforate hymen
    - Vulvovaginitis
- ☐ Carry out an accurate voiding history.
- ☐ Select ultrasonography and appropriate tests to assess bladder function.
- ☐ Propose a treatment plan of the main pathologies.
- ☐ Refer to an urologist when necessary and provide a prompt referral for surgical exploration of testicular torsion.

## Emergency Care

### EMERGENCIES IN PRIMARY CARE PAEDIATRICS

#### Knowledge and understanding

##### *General*

- ☐ Recall the commonest cause of cardiorespiratory arrest in children.
- ☐ Recall the correct method for cardiopulmonary resuscitation in children of all ages.
- ☐ Recognize the critical ill condition in children of all ages.

##### *Specific disorders*

- ☐ Recall the different etiologies of
  - Acute respiratory distress
  - Acute abdomen
  - Diarrhea, vomiting and dehydration
- ☐ High fever:
  - Recognize the normal range of body temperature
- ☐ Pain:
  - Recall objective and visual tools used to assess pain
  - Recognize the advantages and disadvantages of the different pharmacologic medications available for pain
- ☐ Febrile seizures:
  - Recall medications that can be administered rectally to treat a febrile seizure
- ☐ Acute abdomen:
  - Identify the plain x ray/ultrasound features of various acute abdominal conditions
- ☐ Burns:
  - Recall the problems associated with different forms of burns (e.g., electrical, contact)
- ☐ Wounds:
  - Recall wound's classification and principles of wound cleansing
- ☐ Bites:
  - Recognize the characteristics of different types of bites (dog, cats..)
  - Identify the types of rabid species in your region and the kinds of bites that require rabies prophylaxis
- ☐ Foreign objects:
  - Recall the importance of the nature of the objects ingested (eg mercury, alkaline or silver cell batteries)
  - Recognize the need and limitations of imaging in patients with suspected foreign body ingestion

## Skills

Be able to:

### *General*

- Plan the initial management of different types of emergencies and refer to a hospital if indicated.
- Initiate appropriate investigations if necessary.
- Plan the initial evaluation of a patient requiring life support.
- Airway management:
  - Secure and check the airway of the patient
  - Use an oropharyngeal airway, an ambu-bag, choose the correct ventilator tube size for children of various ages, insert the ETT tube and provide an adequate mask-valve-bag positive pressure ventilation
  - Assess the adequacy of ventilation
- Cardiac and circulatory:
  - Provide adequate thoracic compressions
  - Recognize the value of an intraosseous device to provide fluids replacement in a critical ill child
  - Choose the correct drugs for the initial management of a shock

### *Specific disorders*

- Acute respiratory distress:
  - Assess an accurately record of the degree of respiratory distress
  - Correct interpretation of O<sub>2</sub> saturation or X-ray
  - Initiate appropriated therapy based on the cause of respiratory distress
- Acute abdomen:
  - Make an appropriate abdomen evaluation and detect an acute “surgical abdomen”
- High fever:
  - Develop a differential diagnosis of fever without localizing signs in children of varying ages
  - Plan the management of children of varying ages with a high fever: local measures, medication, dosage and refer to a hospital if indicated
- Diarrhea/vomiting/dehydration:
  - Assess the state of hydration
- Pain:
  - Assess effectively pain
  - Plan the management of pain in children of varying ages: medication and dosage, the route and ease of administration
- Febrile seizures:
  - Manage a child following a first seizure
  - Manage a child with recurring seizures

□ Burns:

- Elicit the mode of injury in children with burns and wounds
- Assess the percentage of body surface area involved and establish the severity of the burns depending on the location
- Classify burns on the basis of the depth of burns and distinguish between first-degree burns and more serious burns

□ Wounds:

- Distinguish the clinical manifestations of incise or puncture wounds (eg, penetrating nail injuries) related to the time since the injury occurred-
- Plan the management of lacerations and puncture wounds depending on its type, cause, time and depth and account for possible complications
- Use immune globulins and vaccine for tetanus prophylaxis appropriately

□ Bites:

- Differentiate human bites from other forms of bites and determine type, size, and depth of injury from bite

□ Foreign objects:

- Identify signs associated with complications of a foreign body ingestion (e.g., aspiration, perforation)

## ■ TOXICOLOGY

### Knowledge and understanding

#### *General*

- ☐ Recall that the majority of unintentional poisoning events occur in young children (i.e., less than 6 years old).
- ☐ Recognize the locations where poisoning events are most likely to take place.
- ☐ Recognize the most common substances, and routes, seen in poisoning events in children in your area.
- ☐ Recognize the importance of time of ingestions.
- ☐ Recognize that poisoning may be a sign of child abuse.
- ☐ Recognize the importance of eliminated body fluids and clothing in identifying an unknown toxin.
- ☐ Recall the criteria to refer to a hospital.

#### *Specific disorders*

- ☐ Exposure to toxic substances in the environment
  - Recognize common exposures and health problems that are associated with house renovation and repair, the potential occupational exposures and the type of contaminants potentially found in drinking water, food sources and environment that can directly or indirectly affect the health of children
  - Recognize the role of public health professionals in dealing with control of exposure to environmental toxins

### Skills

#### Be able to:

#### *General*

- ☐ Use as many resources as available to obtain an ingestion history.
- ☐ Interpret signs associated with all common ingestions.
- ☐ Access poison control center if available, Identify on line resources to assist with poisoning management.
- ☐ Provide long term follow up as appropriate.
- ☐ Counsel families to prevent poisonings.
- ☐ Refer to a hospital if indicated.

#### *Specific disorders*

- ☐ Exposure to toxic substances in the environment:
  - Obtain a history of exposure to toxic substances in the environment taking into consideration toxic substances in water, food, home, and local community
  - Detect any signs associated with chronic environmental exposure to toxins and consider exposure to toxic substances in the environment as a cause for symptoms
  - Apply awareness improvement, education, counselling and advocacy to prevent acute and chronic environmental exposures



## Neonatal Care

### Knowledge and understanding

- Recall relevant clinical implications for primary care practice regarding the following areas:
  - Fetal and perinatal physiology and pathophysiological events
  - Intrauterine growth retardation
  - Multiple gestation and birth
  - Preterm birth and specific conditions associated with prematurity
  - Mechanism and consequences of perinatal hypoxia and asphyxia
  - Birth trauma, perinatal complications and injuries
  - Congenital malformations and dysmorphism
  - Postnatal cardiopulmonary adaptation and stabilization
  - Neonatal hyperbilirubinaemia
  - Discharge policies and procedures for healthy and high-risk newborns
  - Routine neonatal screening procedures
  - Normal values of biochemical and hematological investigations in neonatal period
  - Nutritional requirements of the newborn, D and K vitamin prophylaxis
  - Early growth and development in postnatal period
  - Lactation and breastfeeding
  - Maternal mood disorders and depression
  - Drug withdrawal
  - Common specific neonatal conditions and disorders that present in newborns (see detailed list below, under “skills”)

### Skills

#### Be able to:

- Take appropriate medical history (maternal health, family, past and current obstetric, social history, labour and delivery, resuscitation, stabilization, initial care, jaundice, feeding, lactation, immunization, screening, and any other issues).
- Perform a comprehensive physical examination of the newborn infant.
- Analyze the results of biochemical and hematological investigations and correctly interpret normal and abnormal data.
- Assess the quality of newborn nutrition, encourage and promote breastfeeding, advise appropriate technique of breastfeeding and make recommendations on management of common breastfeeding problems.
- Perform clinical screening and diagnostic tests and order appropriate screenings and vitamin prophylaxis.
- Assess normal infant behaviours, safety, ability and readiness of the mother and her family to provide routine infant care, and healthy psychosocial environment.

- Interact effectively and proactively with the parents and perform comprehensive and appropriate health education and anticipatory guidance for infant care.
- Manage adverse perinatal outcomes and helping parents and families to cope the infant's with special needs or chronic disabilities.
- Recognize and manage early alarming signs of a serious disease in the newborn, like lethargy, feeding intolerance, fever, vomiting, abdominal distension, excessive crying, central cyanosis, heart murmur, absent femoral pulses.
- Suspect and recognize the following specific neonatal conditions, providing appropriate management on primary care level:
  - Skin conditions: milia, sebaceous hyperplasia, erythema toxicum, naevus simplex, naevus flammeus, haemangioma, supernumerary nipples, thyroglossal sinuses, skin infections
  - Head, face and eye conditions: caput succedaneum, cephalhematoma, plagiocephaly, cleft lip and palate, congenital cataract, retinoblastoma, conjunctival infections
  - Respiratory problems: apnea, respiratory distress, pneumonia, aspiration, congenital stridor, choanal atresia
  - Cardiac conditions: central cyanosis, congestive heart failure, congenital heart diseases present in newborn period
  - Gastrointestinal conditions: tracheo-esophageal fistula, Hirschprung's disease
  - Endocrine conditions: undescended testicles, congenital hypothyroidism, hypoglycaemia
  - Orthopedic conditions: fractured clavicle, brachial palsy, Erb paresis, polydactyly, syndactyly, torticollis, developmental dysplasia of the hip
  - Hematologic conditions: jaundice
  - Infections: late on-set sepsis, meningitis
  - Drug exposition: fetal alcohol syndrome, cocaine, heroin and amphetamine exposure and withdrawal syndrome
- Recognize emergency situations, carry out rapid and effective resuscitation in case of the newborn fails to establish adequate cardiorespiratory functions.
- Manage Sudden Infant Death Syndrome and Apparent Life-Threatening Events.

## Palliative Care

### Knowledge and understanding

- ☐ Recall the broad definition of palliative care in childhood.
- ☐ Recognize the changing role of palliative care over time, including extension to diseases other than cancer.
- ☐ Recall the varied coping mechanisms used by patients, families, and healthcare providers, including guilt, anger, and sadness.
- ☐ Recognize the needs of the dying child and their family including cultural and religious issues.
- ☐ Recognize the needs for relatives of a sick and dying child (i.e., siblings, parents, grandparents) to talk about their experiences.
- ☐ Identify that children know they are seriously ill whether they are told or not and may feel abandoned and unloved when the adults around them do not offer to be open and to answer questions about their illness progression and prognosis.
- ☐ Recognize the impact of anxieties about death, hidden or overt, among professionals, patients, and families.
- ☐ Understand common family responses to impending death of a child.
- ☐ Identify the need for support when dealing with the pain of loss associated with the deterioration and death of patients and have appropriate personal and professional support mechanisms in place.
- ☐ Recall the legal and ethical issues related to medical decision making and withdrawing life support, euthanasia and physician-assisted suicide.

### Skills

#### Be able to:

- ☐ Conduct a thorough history identifying all the agencies and professionals who are involved in the care of the child.
- ☐ Detect the child and families perceptions of the roles each of these agencies and professionals play in the care of the child.
- ☐ Apply a family-centred approach.
- ☐ Provide seamless, coordinated care in the face of a chronic or complex condition.
- ☐ Counsel families appropriately regarding treatments used.
- ☐ Provide appropriate professional support to families after death of a child.
- ☐ Detect aspects of the history that may present ethical or legal dilemmas in the management.

## Sports Medicine

### Knowledge and understanding

#### *General*

- Recall basic exercise physiology including aerobic and anaerobic respiration and the energy transfer systems releasing energy from carbohydrates, fats and proteins.
- Recognize the benefits of regular exercise on health and how health impacts upon a child's ability to exercise.
- Have a basic understanding of the effects of environment on exercise (e.g., heat, cold, altitude, pollen).
- Recognize the importance of skeletal maturity in determining the appropriate type of physical training.

#### *Specific disorders*

- Evaluation for sports participation:
  - Recognize when a detailed cardio-respiratory assessment is required
  - Recall standardized questionnaires used in evaluation for sports participation
  - Identify regulations regarding eligibility and limitations for sports participation among various medical conditions

### Skills

#### Be able to:

#### *General*

- Routinely make an assessment of the level of physical activity of a child whenever taking a history.
- Detect signs of evidence of excess or inadequate physical activity.
- Make an assessment of cardiovascular and respiratory function.
- Advise parents and children on healthy living and exercise in both fit children and those with chronic illness and disabilities.
- Identify any medications being taken by the child that may impact upon sports performance or participation.
- Identify any evidence of sudden death in the family which may indicate inherited cardiac disease.
- Advise on the effects of febrile illness on sports participation.
- Advise families of children with various conditions that have an effect on sports participation (e.g., diabetes, epilepsy) and the precautions that may be required during exercise.
- Advise on the common sporting injuries associated with different sports.

- Provide advice about the suitability and side effects of using performance enhancing medications.
- Consult with specialists of children with chronic illnesses regarding their suitability for participation in sport where indicated.
- Counsel families on appropriate diet and fluid requirements for those participating in exercise both for recreation and competitively.
- Know how to manage the more frequent pathology in regard to exercise: sprain, strain, contusions, knee injuries, ankle injuries, foot injuries.

### ***Specific disorders***

- Evaluation for sports participation:
  - Elicit a history of any previous medical conditions that might limit a child's participation in sports
  - Identify health problems associated with competitive female athletes (e.g., eating disorders, amenorrhea)
  - Assess musculoskeletal abnormalities that may have implications for participation in exercise
  - Detect signs of anabolic steroid use
  - Detect any signs of injury resulting from sport
  - Select investigations to assess suitability for sports participation
  - Select investigations to assess for complications of sports participation (e.g., bone densitometry, if available, for competitive female athletes)
- Musculoskeletal injuries:
  - Take an accurate history of the event leading to injury
  - Detect the clinical manifestations of the more frequent pathology in regard to exercise: sprain, strain, contusions, knee injuries, ankle injuries, foot injuries
  - Use x-rays mainly to rule out bony injury
  - Plan for the acute management of the injuries
  - Appropriately use, and recommend the use of, ice packs in soft tissue injury, rest and anti-inflammatory drugs
  - Refer to the emergency department or to the specialist when indicated

## Pharmacology

### Knowledge and understanding

#### *General*

- Recall about the drug interactions of commonly used drugs and complementary therapies.
- Recognize which drugs should be taken with food or which should be taken on an empty stomach.
- Recall placental transfer and breast milk excretion of drugs.
- Identify factors affecting compliance.
- Identify the most frequent types of medication's errors associated with drug prescribing for children (e.g., incorrect strength, duplicate dose, incorrect rate).
- Identify the role of reporting adverse drug reactions.

#### *Specific drug classes used in Primary Care*

- Antibiotics:
  - Identify common antibiotic resistance patterns in your locality
  - Recognize serious adverse affects associated with the use of various antibiotic drugs (e.g., hypersensitive reaction, Stevens-Johnson syndrome, serum sickness)
- Diuretics:
  - Identify ototoxicity and nephrotoxicity as potential adverse dose-related effects of furosemide
- Corticosteroids:
  - Recognize the special risks for chronically corticosteroid-dependent children (e.g., growth retardation, pathologic fractures, immunosuppression, cataracts, diabetes)
  - Recognize that if glucocorticoids with high-dose have been administered for  $\geq 14$  days, the recommended interval between discontinuation of treatment and live virus vaccines is one month
- Anti-inflammatory drugs:
  - Recall the common side effects associated with the use of non-steroidal anti-inflammatory drugs
  - Recall that vaccine recipients should avoid the use of salicylates for 6 weeks after receiving varicella or MMRV vaccine because of the association between aspirin use and Reye syndrome
- Beta-agonists:
  - Recall the pharmacokinetics of short- and long-acting inhaled beta-agonists and the risks associated with their excessive use

- Anticonvulsants:
  - Recall the side effects, toxicities and laboratory abnormalities associated with anticonvulsant therapy
- Antidepressant and stimulant drugs:
  - Identify the risks associated with the use of various antidepressant drugs
  - Recognize the common side effects of medications used to treat attention deficit hyperactivity disorder

## Skills

Be able to:

### *General*

- Locate product names (brand, generic, chemical) and ingredients, as well as concentrations from patient and/or labels.
- Calculate dosages accurately based on weight, age and/or body surface area.
- Gather information necessary for prescribing through use of paediatric formularies and pharmacy consultation.
- Explain to parents how to properly administer medicine.
- Prescribe safely for the newborns, children, and breast feeding mothers.
- Prescribe safely for children with renal or liver failure.
- Respond appropriately to errors of prescription or administration and be able to talk to parents about errors.

### *Specific drug classes used in Primary Care*

- Antibiotics:
  - Prescribe appropriately antibiotics for antimicrobial prophylaxis (e.g., urinary tract infection or to protect against endocarditis)
  - Prescribe appropriate antibiotics for infections prior to sensitivities being available
- Corticosteroids:
  - Manage patients with long time corticosteroids treatment and assess treatment will not be discontinued abruptly
- Analgesia:
  - Administer pain medication in a stepwise fashion using appropriate medications and routes of administration

