

Syllabus and Curriculum of the Residency in Paediatrics in Israel

1. Duration and stages of residency:

Residency in paediatrics in Israel lasts as a rule 4.5 years and includes the following stages:

- i. Thirty three (33) months training in a university affiliated inpatient hospital department, out of which 6 months may be done either in a day care facility or splitted between such a unit and a Pediatric ICU facility.
- ii. Six (6) months training in neonatology including neonatal intensive care (NICU).
- iii. Six (6) months training in an ambulatory primary care facility or a secondary care (advisory referral) general paediatrics outpatient clinic affiliated to a pediatric department.
- iv. Three (3) months in one of the following subspecialty disciplines:
 - Paediatric Endocrinology
 - Genetics
 - Paediatric Gastroenterology
 - Paediatric Haemato-oncology
 - Paediatric Neurodevelopment unit
 - Paediatric ICU
 - Obstetrics & Gynecology
 - Paediatric Surgery
 - Infectious Diseases
 - Skin & Venereal Diseases
 - Paediatric Pulmonology
 - Paediatric Neurology and Neurodevelopment
 - Paediatric Nephrology
 - Child and Adolescent Psychiatry
 - Paediatric Cardiology
 - Paediatric Rheumatology
 - Diagnostic Radiology
 - Physical Medicine and Rehabilitation
 - Paediatric Emergency Medicine
- v. Six (6) months of Basic Science

2. Detailed academic requirements:

Training in paediatrics is a lengthy process that begins with medical studies in the faculty, lingers into internship but does not end with the completion of residency. The goal of residency is to set a minimum standard that allows a certified paediatrician to achieve skill as an expert in the field and does not mark the completion of the training. This minimum standard is set considering the constant "explosion of knowledge" and the never-ending development of both in-patient and ambulatory paediatrics and assuming that some of the residents will choose to continue their training in sub-specialties and engage in exercising their profession in hospital or primary care setups.

The aspirant "expert in paediatrics" has to fulfill the following requirements:

- i. Master knowledge of the pathophysiology, clinical presentation, diagnosis and treatment of the sick child: water and electrolyte homeostasis, breathing mechanism, cardiovascular system, etc.,
- ii. Be able to interpret and evaluate standard laboratory tests and imaging procedures (biochemistry, bacteriology, hematological, etc.,)
- iii. Be able to Interpret and evaluate standard medical imaging
 - a. X rays (Roentgen) – chest, abdominal, bones, upper & lower gastrointestinal series, UG tract
 - b. Ultrasound
 - c. Bone scan
 - d. Computerized Tomography (CT)
 - e. Magnetic Resonance Imaging (MRI)
- iv. Accomplish competence and dexterity in performing the following basic diagnostic and therapeutic procedures:
 - a. Diagnostic Procedures:
 - Blood smear
 - Urinalysis
 - Stool test
 - Otoscopy
 - Fundoscopy
 - ECG (performing and interpretation)
 - Lumbar tap
 - Bone marrow aspiration
 - Pleural tap
 - b. Therapeutic procedures
 - CPR
 - Venipuncture and intravenous therapy
 - Blood transfusion
 - Infant nutrition
 - Dietary advice
- v. Gain expertise in the treatment of newborns and premature babies including the various feeding techniques.
- vi. Have the know-how to deal with psychological issues of the child and his family
- vii. Expertise in dealing with growth and developmental problems.
- viii. Be skillful and knowledgeable in adolescent health issues.
- ix. Master knowledge of the different methods of treatment and prevention – therapeutic, physical, and surgical – and the indications for implying them.
- x. Accomplish a status where, based on analyzing data and evaluating alternatives against objectives, a decision making process will lead him to select a course of action, thus allowing him to perform independently as a pediatrician both in ambulatory and in hospital settings as well as tutor junior residents and students.
- xi. Train him / her to work in cooperation with subspecialists and secondary care medical institutions, understand the pros and cons of diagnostic procedures and therapeutic modules offered by them, absorb the data and be able and skillful to implicate it in the decision making process regarding the health of the individual under his care.
- xii. Be able to recognize rare or unusual problems and deal with them by thorough search and learning of the relevant professional literature and judicious use of diagnostic means.
- xiii. Master the relevant scientific literature and be alert and responsible of constant updating.

3. Detailed areas of expertise:

- i. Growth and development of the infant, child and adolescent.
- ii. Laboratory tests: how to do and interpret routine laboratory tests: blood, urine, feces, spinal fluid, and synovial fluid.
- iii. Blood morphology: perform and interpret peripheral and bone marrow blood smears and tests including the ability to diagnose blood diseases (e.g. Anemia), leukemias, proliferation and depletion of cell subpopulations.
- iv. Cardiovascular diseases: physical diagnosis, evaluation of imaging and radiological studies, performance and interpretation of ECG, knowledge of the invasive and non invasive diagnostic procedures at the different ages, master the pharmacological treatment of arrhythmias, heart failure, hypertension, etc.
- v. Respiratory and pulmonary diseases: diagnosis of the different diseases – pneumonias, pleural effusion, collapse, foreign body, Respiratory Distress Syndrome, Broncho Pulmonary Dysplasia, acute and chronic asthma, chronic pulmonary diseases, TB, etc., Knowledge of the indications and contraindications for bronchoscopy and the use of imaging in respiratory medicine. Knowledge of respiratory physiology, lung function tests, blood gases, etc., Knowledge of indications and contraindications for surgical interventions (e.g. drain insertion).
- vi. Gastrointestinal diseases: acquaintance with acute and chronic GIT diseases (e.g. GER, NEC, acute and chronic diarrhea, IBD, irritable colon, etc.). Knowledge of diagnostic and imaging procedures, absorption tests, endoscopies, etc.,
- vii. Nephrologic diseases: appraisal of renal function, approach to problems as hematuria, proteinuria, nephritis, nephritic syndrome. Know the principles of treatment in renal failure (acute and chronic), imbalance of base-acid metabolism, fluid and electrolyte therapy, etc.
- viii. Neurology: master neurological examination. Knowledge of the diseases of the nervous system (infectious diseases, tumors, metabolic and degenerative diseases, cerebro-vascular diseases and states, etc.). Knowledge of the diagnostic uses of lumbar puncture
- ix. Infectious diseases: acquaintance with the different infectious diseases, the ways of diagnosing by laboratory means (serology, culture, malaria by Giemsa stained blood smear, etc.) efficient use of antimicrobials and knowledge of the prevalent vaccines available in the routine schedule and beyond.
- x. Hematology – Oncology: the diagnostic and therapeutic approach to the anemic child, coagulopathies and the use of anticoagulants, principles in the treatment of myeloproliferative and lymphoproliferative disorders.
- xi. Rheumatology and clinical immunology: acquaintance with the different rheumatic diseases (rheumatic fever, Familiar Mediterranean Fever, juvenile rheumatoid arthritis, etc.), autoimmune disorders, immune deficiency states, arthritic diseases/ the therapeutic uses of immunoglobulins, knowledgeable in the diagnosis of complement disorders, rheumatic diseases and abnormalities in the synovial fluid.
- xii. Endocrinology and metabolic states: functional, clinical and laboratory evaluation of the endocrine system and principles of therapy in the various common endocrinologic disorders, emphasizing the diagnosis and treatment of diabetes, altered metabolism of calcium, disorders of the adrenal circle, obesity, undernourishment, congenital metabolic disorders.
- xiii. Neonatal intensive care: besides attaining knowledge and skill in the daily NICU routine, the resident will pass a full NPR course (Neonatal Resuscitation Program by the American Academy of Pediatrics in association with the American Heart Association)
- xiv. Paediatric Emergency Medicine: knowledge and expertise in treating acute problems in pediatrics including advanced life support and CPR, the diagnosis of life threatening situations (e.g. respiratory distress, shock, convulsions), primary first aid and treatment of minor trauma, a full two days APLS course developed by the American Academy of Pediatrics and the American College of Emergency Medicine.

- xv. Clinical Pharmacology and Toxicology: knowledge of the methods of drug and medicine treatment, side effects and interaction among the different medications, common toxic substances, overdose of medications toxins, poisons, the treatment of lesions by animals including reptiles, antidotes and their administration.
- xvi. Psychiatric disorders: acquaintance with the different mental health states and issues in pediatrics.
- xvii. Social issues including adoption, abuse, violence, substance abuse, alcohol.
- xviii. Genetics knowledge of the different genetic disorders and diseases and the means of diagnosing them. The human Genome, forms of genetic transmission, cytogenetics, integration of genetics in the practice of paediatrics
- xix. Preventive Medicine and Vaccines: acquaintance with the vaccines in use, Growth and development
- xx. Metabolic Disorders: the approach to diagnosis of inborn errors of metabolism and congenital metabolic disorders (amino acids, lipids, carbohydrates, mucopolysaccharides, purines, piramidines, etc.)
- xxi. Adolescent Medicine: epidemiology of problems in the adolescence, violent behavior, menstrual problems, sexual behavior, teenage pregnancy, etc.

4. Methods of acquiring knowledge and expertise:

- i. The resident should be able to admit, recognize the history of the present complaint and disease, examine, set the program for clinical, laboratory and imaging diagnostic procedures and eventually diagnose and suggest treatment for patients under his attention.
- ii. The resident should follow up regularly his / her patients, evaluate and document the course of the disease and eventually summarize the case in an appropriate discharge letter.
- iii. The resident shall practice under the supervision of the Chief of Pediatrics or whoever has been appointed by the Chief to the outpatient clinics, "well bay" clinics, school infirmaries, primary care facilities and preventive medicine health centers.
- iv. The resident will take part under the guidance of the Chief of Paediatrics or a senior paediatrician appointed by him / her in presenting cases, clinical and clinic-pathological presentations and discussions all based on current updated professional literature.
- v. The resident will present medical literature reviews and pertinent papers and researches in "journal clubs" both in the department and elsewhere.
- vi. The resident will play an active role in research going on in the department and be guided towards scientific papers.

5. Basic Science

A six month period shall be devoted to research and work in a field of basic science, finalizing it by a scientific report and ideally a scientific paper to be published in the medical literature. Ideally the place and theme should be chosen by the resident under the guidance of the Chief during the second year of internship but should be postponed until the third year. As a rule the three month rotation should take place after this.

6. Training towards independence

During the last year of training the resident should act independently helped mainly by younger residents. He or she will be assigned by the Chief tutorial functions to younger residents and students. This is crucial

to the understanding that a physician has the duty to learn and teach. In this period of time the resident will see patients independently in the clinics and act as advisor to other departments in the hospital.

7. Responsibilities of the Medical Chief (Head of the Department)

The Chief is responsible to the implication of the residency program and should enforce and assure the following:

- i. Exposure of the resident to the feedback and scrutiny of senior physicians on a daily basis.
- ii. Exposure of the resident to different medical opinions both within the department and external advisors.
- iii. Case management by the resident at different levels according to the stage in which the resident is.
- iv. When possible, exposure of the resident to the follow up care and management of the child following hospitalization for a better acquaintance with the natural course of diseases.
- v. The Chief will allow the resident access and sufficient time to search the current scientific literature relevant to cases under his / her care.
- vi. The Chief will establish a departmental Journal Club where residents will participate on a regular active basis by presenting literature reviews and important articles.. In addition TheChief will encourage participation in divisional and general staff meetings.
- vii. The Chief will encourage the resident's participation in teaching in the ward and ambulatory or outpatient clinics.
- viii. The Chief will encourage the resident's participation in scientific research and investigation and drive him / her towards scientific writing and publication in the leading professional journals.
- ix. The Chief should be the residents' advisor on the future professional career by helping him / her in choosing a subspecialty, clarifying the probability of staying in the department after completion of the residency or engaging in ambulatory pediatrics.

8. Participation in Scientific Meetings

The resident shall participate regularly and actively in scientific meetings all along the training. These include Grand Rounds, staff meetings and national scientific meetings. In these meetings the resident shall present patients and/or scientific material under the guidance of the Chief of the Department. The Chief will encourage the resident's active participation and presentation in national congresses and meetings

9. Literature

The resident should be updated with professional literature and by the end of the residency should have a thorough and profound knowledge of the updated edition of one of the two Paediatric textbooks: Nelson Textbook of Pediatrics (W.B. Saunders Company) or Rudolph's Pediatrics (McGraw-Hill). He / she should routinely and regularly read the pertinent major international paediatric journals (Pediatrics, Journal of Pediatrics) as well as selective reading of other major journals, be acquainted and read update publications (Pediatrics in Review, Pediatric Clinics of North America, etc) and should read specific themes and issues in the textbooks of subspecialties within pediatrics.