PEDIATRICS
A Guide to the Four Year Specialty Training Program
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Introduction

Paediatrics is that branch of medicine concerned with the study of infants, children and adolescents in health and disease, their growth and development, and their opportunity to achieve full potential as adults.

The Pediatric Residency program under DRTP provides:

- Organized education with guidance and supervision sufficient to facilitate the resident's professional and personal development while ensuring safe and appropriate patient care.
- Educational quality and patient care quality are conducted to enhance rather than interfere with each other.
- Balance of assignments and support are maintained so that the program does not rely on residents to meet patient care needs at the expense of effective and accountable education.
- Focus on development of clinical skills, appropriate behavior & attitude, scholarship & professional competencies.
- Hospital, ambulatory and community settings are utilized proportionately to reflect the importance of caring directly for adequate numbers and kinds of patients.
- Residents are assigned progressively greater responsibility for patient care throughout the training, consistent with individual capabilities, maturity, growth in clinical experiences, knowledge, skills and overall competence.
- There are regular evaluations, feedback, and review of performances of resident, program and institution.

Mission of the program is to develop and produce specialists in Pediatrics who have the knowledge, skills and attitudes necessary to manage the complete spectrum of conditions that arise in the care of infants, children and adolescents in health and disease. The program also strives to develop individuals who practice the profession humanely, with the highest of ethical standards and integrity and will contribute to the Community in the areas of education and research as well as providing excellent clinical care.

Objectives of the Program

GENERAL

- Acquire special education and expertise and leadership skills in the field of Paediatrics and as well as in health care delivery, education and research.
- Have a broad educational experience in Pediatrics to understand infants, children and adolescents in health and in sickness, and deal effectively with their physical, mental, emotional and social problems.
- Be capable of independently providing high quality clinical care and education in all aspects of Pediatrics.
- Contribution to research.
- Have self-evaluation & learning skills in areas of problem-solving, evidence based medicine, and critical appraisal at a level to ensure that they remain effective clinicians, teachers and investigators throughout their careers

SPECIFIC

A pediatrician is a specialist trained in the profession of health and in the diagnosis and treatment of a broad range of diseases involving children based on a sound knowledge of normal growth and development and of the wide range of clinical conditions encountered by infants, children, and adolescents. On completion of the educational program, the graduate physician will be competent to function as a consultant pediatrician in the essential roles and key competencies of pediatricians, i.e. - medical expert/clinical decision-maker, communicator, collaborator, manager, health advocate, scholar and professional. This requires the physician to have acquired these knowledge, skills and attitudes through coordinated learning experiences. This will include practical clinical experiences and formal educational activities. The resident will have acquired a degree of independent responsibility for clinical decisions and an understanding of the nature of the relationships between a referring physician and a consultant clinical pediatrician. Following certification in Pediatrics, the resident will be prepared for independent practice.

A broad educational experience in Pediatrics is essential if residents are to understand infants, children and adolescents in health and in sickness, and if they are to deal effectively with their physical, mental, emotional and social problems.

Educational objectives of such a basic and fundamental nature, relating to all or many aspects of Paediatrics, are classified under the headings of the Essential Roles and Key Competencies of Paediatricians, which encompass knowledge, skills, and attitudes.
Program Administrators

Our Program Administrators in partnership with an expert team of supervisors & faculty steer the Pediatrics Program towards the zenith of quality Residency training education offered in Dubai.

Under their expert care, your training journey is guaranteed to be an enlightening experience.

Dr. Entesar AlHammadi
PROGRAM DIRECTOR
Consultant – Al Jalila Hospital

Dr. Yaser Husain Morsy El-Saba
PROGRAM CO-DIRECTOR
Consultant – Neanotology, DH

Dr. Gamal Helmy Ismail Mahmoud
PROGRAM CO-DIRECTOR
Specialist Senior Registrar, LH
Paediatricians possess a defined body of knowledge and procedural skills, which are used to collect and interpret data, make appropriate clinical decisions and carry out diagnostic and therapeutic procedures within the boundaries of their discipline and expertise. Their care is characterized by up-to-date ethical and cost-effective clinical practice and effective communication in partnership with patients, other health care professionals, and the community. The role of medical expert/clinical decision-maker is central to the function of paediatricians and draws upon the competencies included in the roles of scholar, communicator, health advocate, manager, collaborator, and professional. In this role, the resident will demonstrate diagnostic and therapeutic skills for ethical and effective patient care.

- Knowledge of normal body structure and function as expressed in a bio psychosocial model of human development. The resident will understand the normal human anatomy, physiology and psychology with emphasis on physiological and psychological changes during growth and development.
- Knowledge of disturbed body structure and function. The resident will understand the patho-physiological and psychological processes underlying departures from normal. The resident should therefore be able to recognize, diagnose and manage the normal healthy state and the natural course of pediatric problems, variations in and deviations from the normal.
- Knowledge of promotion and maintenance of optimal functioning in biological and psychological aspects. This will include knowledge of therapy in its broadest sense, to include life-style, dietary, nutritional, physical and drug therapies. The resident will demonstrate the ability to access and apply relevant information to clinical practice.
- Interviewing and communication skills. The resident will be able to establish a professional relationship and to interact with the patient (infant, child or adolescent) and parent, guardian or other caregivers in order to obtain a history, conduct a physical examination and provide ongoing care. The pediatric resident will establish an atmosphere of open communication appropriate to the situation and will convey interest, sensitivity, empathy and support.
- History taking skills. The resident will be able to obtain and record a complete history including:
  - Identifying data and date of contact
  - Reasons the patient was brought for or sought medical help (chief complaint)
  - The important symptoms in sufficient detail for a clear picture of the clinical problem(s) - history of present illness
  - All other important information from the past history, prenatal history, developmental history, medications, allergies, reviews of systems, family history, and social history.
- Physical examination skills. The resident will carry out an efficient, orderly physical examination, demonstrating sensitivity to the patient’s needs, modified according to the patient’s age, gender and problem, and record this information by regions or systems.
- Problem Solving and Decision Making. The resident should demonstrate the ability to correlate, evaluate, prioritize and synthesize information, including the relevant ethical issues, acquired by interview, history taking and physical examination. The resident should recognize and define problems (formulation) and generate a differential diagnosis and problem list.
  The resident will be able to demonstrate the ability to manage problems by:
  - Appropriate application of knowledge derived from critical appraisal of the literature,
  - Formulation of a problem oriented plan of management,
  - Generating a rational plan of diagnostic & therapeutic measures with use of information on cost benefit ratios,
  - Interpretation and modification of a plan of management with explanation and ongoing communication with parents and child,
  - Participating suitably in multi-disciplinary group discussion, initiating or facilitating as required,
  - Maintaining confidential information as appropriate,
  - Evaluating and modifying management plans by periodic reassessment of the patient’s progress,
  - Ensuring proper recording of care and its effectiveness,
  - Participating in medical quality assurance activities to review quality of care issues in provision of health care.
- Consultation Skills. The resident should demonstrate effective consultation skills in presenting well-documented assessments and recommendations in written and/or verbal form in response to a request from another healthcare provider, with respect to patient care, education and legal opinions.
  The resident should recognize personal limitations and demonstrate a willingness to call upon others with special expertise and make referrals where appropriate.
- Technical Skills. The resident must demonstrate knowledge & skills required for safe & efficient practice of following procedures.
  - Intravenous access and blood-drawing
  - Umbilical venous & umbilical arterial catheterization
  - Arterial puncture
  - Suture of a one-layer laceration, simple wound closure
  - Cardiopulmonary resuscitation (newborn and child)
  - Tracheal intubations (newborn and child)
  - Lumbar puncture
  - Bladder catheterization and/or suprapubic aspiration
  - Gastric tube placement
  - Intraosseous insertion, chest tube placement and thoracentesis as demonstrated in either a patient of model

The Resident should also have knowledge and proficiency of the specific technical skills as outlined in the Syllabus.
COMMUNICATOR

To provide humane high quality care, paediatricians establish effective relationships with patients, other physicians and other health care professionals. Communication skills are essential for the functioning of a paediatrician and are necessary for obtaining information from, conveying information to patients and their families and establishing therapeutic relationships with patients and families. Furthermore these abilities are critical in eliciting patients’ and/or families’ beliefs, concerns & expectations about their illnesses, and for assessing key factors impacting patients’ health.

The resident will be able to demonstrate the ability to:
- Listen effectively and obtain and synthesize relevant history from patients, families and communities,
- Communicate effectively and discuss appropriate information with patients and families and all members of the interdisciplinary health care team,
- Educate patients, families and health care professionals in formal and informal educational settings
- Present the patient’s problem(s) clearly, concisely and correctly, in the following ways:
  - Verbally, in the clinical setting or formal presentation
  - In a written medical record (in standard/problem oriented form) or consultation report
- Care & empathize for patients & their families, especially for those individuals who are vulnerable.
- Pay close attention to the impact of such factors as age, gender, disability, ethno-cultural background, social support, and emotional influences on a patient’s illness.
- Respect individual patients, families, colleagues and for their value systems which may be different from the resident’s own values.
- Appreciation of parents’ perspective of and concerns for a child’s health and the impact of a child’s illness on family relationships.
- Willingness to communicate effectively with patients and families and all members of the interdisciplinary team.
- Ability to support & counsel a child & (and his/her family) with chronic illness and/or impending death and provide bereavement counselling.

COLLABORATOR

Pediatricians work in partnership with others who are appropriately involved in the care of children and adolescents. It is therefore essential for pediatricians to be able to collaborate effectively with patients, their families and a multidisciplinary team of expert health professionals for provision of optimal patient care, education, and research. They are also required to demonstrate a capacity to establish and maintain a productive and responsible relationship with young patients and families, and a capacity to establish and maintain cooperative interpersonal relationships with a multi-disciplinary team and thus contribute effectively to other interdisciplinary team activities.

MANAGER

Paediatricians function as managers when they make every day practice decisions involving resources, co-workers, tasks, policies, and their personal lives. They do this in the setting of individual patient care, practice organisations and in the broader context of the health care system. Thus paediatricians require the abilities to prioritise and effectively execute tasks through teamwork with colleagues, and make systematic decisions when allocating finite health care resources. As managers, paediatricians take on positions of leadership within the context of professional organisations and their National health care system.

The resident will be able to demonstrate the knowledge of various forms of health care provision and to work effectively and efficiently in a healthcare organization, including the following:
- Understanding the importance of the families’ involvement in the provision of health care to the child
- Role of pediatricians in provision of preventive & therapeutic healthcare is based on sound scientific evidence
- Importance of shared responsibility for health care provision in a multidisciplinary setting,
- Advantages, disadvantages and relative costs of preventive and therapeutic health care programs,
- Advantages, disadvantages and relative costs of care in different settings, including an appreciation of the various forms of health care provision, including hospitals, ambulatory clinics, private offices, home care, chronic care and rehabilitation facilities,
- Avoiding unnecessary investigation and/or hospitalization,
- Advantages and disadvantages and the impact on the child and the family of such forms of care.

Quality Assurance includes:
- Knowledge of the definitions and role of audits, quality improvement, risk management, occurrence / incident reporting, and complaint management in a hospital and ambulatory setting,
- Knowledge of cost/benefit ratios of diagnostic and therapeutic interventions, cost-containment and efficacy, effectiveness and efficiency as they relate to quality assurance,
- Willingness to participate in cost-containment and quality assurance programs.

The resident will demonstrate:
- Awareness of the need to continually balance professional, personal, institutional and social commitments.
- Open-mindedness to the consideration of alternative health care practices.
- Awareness of cost and cost effectiveness of various forms of pediatric care, and the ability to utilize resources effectively and to allocate finite health care resources widely.
- Awareness of the societal & governmental aspects of health care provision as applied to the pediatric age group.
- Ability to utilize information technology to optimize patient care, life-long learning and other activities.

HEALTH ADVOCATE

Paediatricians recognise the importance of advocacy activities in responding to the challenges represented by those social, environmental, and biological factors that determine the health of children and adolescents within society. They recognise advocacy as an essential and fundamental component of health promotion that occurs at the level of the individual patient, the paediatric population, and the broader community. Health advocacy is appropriately expressed both by the individual and collective responses of specialist physicians in influencing public health and policy. The Resident will:
- Demonstrate an appreciation that the health care needs of children are distinct from those of adults.
- Encourage promotion of active family involvement in decision-making and continuing management of the child.
- Demonstrate the ability to contribute effectively to improved health of patients and communities.
- Identify the important determinants of health that affect children and adolescents. This includes the ability to recognize, assess, and respond to the psychosocial, economic, societal and biologic factors influencing the health of those served.

SCHOLAR

Paediatricians engage in a lifelong pursuit of mastery of Paediatrics. They recognise the need to be continually learning and model this for others. Through their scholarly activities, they contribute to the appraisal, collection, and understanding of health care knowledge, and facilitate the education of their students/house staff, patients, and other health professionals. The Residents will:
- Recognize the importance of self-assessment of professional competence and acceptance of the responsibility for self-directed learning as a lifelong goal, to develop, implement and monitor a personal continuing education strategy. Learning should incorporate critical appraisal and evaluation of medical and other relevant literature.
- Maintain a questioning and inquisitive attitude towards medical information and an appreciation of the necessity for ongoing research to develop new knowledge.
- Facilitate the education of patients, house staff/students and other health care professionals and contribute to development of new knowledge.

PROFESSIONAL

Paediatricians have a unique societal role as professionals dedicated to improving the health and wellbeing of children and adolescents. Paediatricians are committed to the highest standards of excellence in clinical care and ethical conduct, and to continually perfecting mastery of their discipline. Paediatricians are committed to delivering highest quality care with integrity, honesty and compassion.

The resident will demonstrate knowledge of:
- Basics the principles of medical ethics including "best interest" of the child, autonomy, beneficence and non-malfeasance, confidentiality, truth-telling, justice, respect for persons, conflict of interest, advanced directives and end-of-life care, and resource allocation.
- Obtaining informed consent in addition to the ability to execute.
- Ethical decision-making process.
- Required communication skills.
- Child development and family theory that is applicable to pediatric medical ethics.
- Legal and ethical codes of professional behavior and the obligations of a physician that apply to pediatrics including notification of coroner, reporting of suspected child or sexual abuse, public health issues with respect to infections.
- Tolerance for ambiguity and uncertainty and the possibility of error in ethical decision-making; flexibility and willingness to adjust appropriately to changing circumstances.
- Trustworthiness (honesty, confidentiality) with respect to patients, families and colleagues.
- Recognition of personal limitations and a willingness to call upon others with special expertise.
- Willingness to accept peer and supervisor reviews of professional competence.
- Appreciation of the moral and ethical implications of various forms of patient care and research.

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Program Structure & Rotations

The Pediatric Residency Program will include experiences in core general pediatrics and in the various pediatric subspecialties, in both in-patient and ambulatory settings. To ensure an adequate breadth of training, maximum experience in any one subspecialty or discipline is limited over the four years.

The resident will learn to set his/her own educational goals and will be given the opportunity for clinical and research elective experiences in the fourth year.

Research activities will be encouraged and supported throughout the entire four years.

Clinical faculty directed classroom learning will occur on a weekly basis, and attendance will be mandatory; and, time will be protected from clinical duties to facilitate attendance.

Core Rotations

The program will provide a strong base for comprehensive pediatric knowledge through general inpatient pediatrics, critical care, neonatology, and a wide variety of subspecialty rotations over the first three years. The final year will include 16 weeks of electives of which up to two months can be dedicated to completion of a research activity, at the discretion of the Program Director. The elective period may be within or outside the country. DHA will however not have financial responsibilities for outside programs.

The final year will be spent in a senior supervisory capacity, with responsibility for education and supervision of more junior trainees. While in this capacity, the resident will report directly to a staff pediatrician.

Electives

Sixteen weeks of the final year will be elective study. The resident will be encouraged to choose an elective experience in any area of Pediatrics in which he/she is interested. Electives will be pursued in the UAE and meet the following requirements:

- An educational program is delineated
- Patient population is appropriate in quality and quantity
- Supervising staffs are available and have sufficient background and Expertise to ensure that the educational goals, objectives, and/or curricular content can be met.
- The elective institution has a commitment to the education of residents.
- The usual Pediatric Residency evaluation is adhered to.

Formal Educational Activities

All residents are required to participate in the academic half-day program. This program will take place weekly throughout the year and will consist of seminars on pertinent topics in Pediatrics to augment their clinical learning. The residents will be excused from ward or outpatient duties at this time. In addition to this, the resident will be expected to contribute in a scholarly manner to the scheduled rounds and journal clubs on a regular basis in each rotation.

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<th>Rotation</th>
<th>Duration</th>
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<tbody>
<tr>
<td>General Pediatrics</td>
<td>24 weeks</td>
<td>General Pediatrics</td>
<td>16 weeks</td>
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<tr>
<td>Neonatal ICU</td>
<td>8 weeks</td>
<td>Neonatal ICU</td>
<td>6 weeks</td>
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<tr>
<td>Emergency</td>
<td>6 weeks</td>
<td>Emergency</td>
<td>8 weeks</td>
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<tr>
<td>Pediatric Surgery</td>
<td>6 weeks</td>
<td>Research</td>
<td>4 weeks</td>
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<tr>
<td>Trauma</td>
<td>4 weeks</td>
<td>Out Patient Department</td>
<td>6 weeks</td>
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<tr>
<td>Leave</td>
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<td>Nephrology</td>
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<tr>
<td>Total</td>
<td>52 weeks</td>
<td>Neurology</td>
<td>4 weeks</td>
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<th>Rotation</th>
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<tbody>
<tr>
<td>General Pediatrics</td>
<td>8 weeks</td>
<td>(8 weeks in each sub-speciality)</td>
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<tr>
<td>Research</td>
<td>4 weeks</td>
<td>General Pediatrics</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Emergency</td>
<td>4 weeks</td>
<td>Neonatal ICU</td>
<td>6 weeks</td>
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<tr>
<td>Neonatal ICU</td>
<td>4 weeks</td>
<td>Out Patient Department</td>
<td>6 weeks</td>
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<tr>
<td>Endo</td>
<td>4 weeks</td>
<td>Pediatric ICU</td>
<td>4 weeks</td>
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<tr>
<td>Cardiology</td>
<td>4 weeks</td>
<td>Emergency Department</td>
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<tr>
<td>Gastrology</td>
<td>4 weeks</td>
<td>Research</td>
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<tr>
<td>Genetics</td>
<td>4 weeks</td>
<td>Leave</td>
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<td>Hematology</td>
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<td>Oncology</td>
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<td>Out Patient Department</td>
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<td>Leave</td>
<td>4 weeks</td>
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<tr>
<td>Total</td>
<td>52 weeks</td>
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**Night Call**: To optimize experienced-based learning, the resident will be required to take part in on-call duties. This is a maximum of 7 calls a month. Residents are permitted to go home at 11 am the following morning, but are encouraged to stay for pedagogic activities. Meals are provided while on-call.
This syllabus is based on the major systems and classifications of pediatric illness. They are not subspecialty-based objectives. Objectives are listed once in the most appropriate category, rather than repeated under each relevant section. Knowledge of embryology, anatomy and pathophysiology refers to that which is relevant to common pediatric disorders.

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>KNOWLEDGE</th>
<th>SKILLS</th>
<th>PROBLEMS</th>
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</table>
| ACUTE CARE | - Pathophysiology of altered consciousness, shock, respiratory failure and principles of mechanical ventilation  
- Pathophysiology of cardio respiratory arrest  
- Role of nutrition and fluid management in the critically ill patient  
- Principles, techniques and limitations of invasive and non-invasive cardiorespiratory monitoring  
- Principles, role and logistics of inter-hospital transport of critically ill infants & children  
- Determination of brain death and principles of organ donation  
- Management of the child with special needs / technology dependence. | - Recognition of the critically ill child and stabilization and/or transfer of a critically ill child  
- Airway management & cardiorespiratory resuscitation  
- Access and care for indwelling catheters  
- Manage a child with a tracheotomy tube including replacement of the tube.  
- Management of unexpected death  
- Following technical procedures in addition to above  
  - Foreign body removal - eye/nose  
  - Perform and interpret oximetry  
  - Assess the traumatized eye  
  - C-spine immobilization  
  - Immobilization of acute injury incl. fractures  
  - Gastric lavage  
  - Eye irrigation, and the use of dilating drops, topical fluorescein, topical anesthetics | - Cardio respiratory arrest  
- Foreign body inhalation  
- Shock  
- Acute vomiting  
- Respiratory failure  
- Acute dehydration  
- Status epilepticus  
- Sepsis  
-coma  
- Electrolyte imbalance  
- Near drowning  
- Apparent life-threatening events  
- Poisonings and drug overdoses  
- Multiple trauma  
- Burn management  
- Head injury  
- Child abuse |
| ADOLESCENT HEALTH CARE | - Normal development: cognitive, psychological, relations with peer & parents  
- Adolescents & society; influencing factors, sub-cultures, heterogeneity  
- Health needs and health problems  
- Normal adolescent behavior  
- Intervention principles  
- Laws and resources in adolescence  
- Normal adolescent gynecology | - Gynecological and pelvic examination and specimen procurement  
- Breast examination  
- Assessment of testicular size | - Eating disorders: anorexia nervosa, bulimia  
- Behavioral problems: risk taking, delinquency  
- Gynecological problems and disorders of menstruation  
- Pregnancy issues, contraception, sexually transmitted diseases  
- Alcohol, drug, tobacco and other substance use and abuse  
- Sexual abuse  
- Chronic diseases and compliance to therapeutic regimen  
- Sexuality: male/female issues |
| ALLERGY & IMMUNOLOGY | - The normal host defenses and immune response  
- Variations in normal immune response with age  
- Pathophysiology of immunodeficiency states and autoimmune disease  
- Basic diagnostic laboratory techniques involving the immune system  
- Pathophysiology of allergic disorders  
- Pharmacotherapy and immunotherapy of allergic disorders  
- Indications for and limitations of skin testing, RAST testing and challenge testing | (included in other sections) | - Recurrent infections and immunodeficiency syndromes  
- Seasonal and non-seasonal rhinitis  
- Anaphylactic shock  
- Insect stings  
- Urticaria /angioedema  
- Serum sickness  
- Drug allergy  
- Food allergy |
| CARDIOVASCULAR SYSTEM | - The anatomy, hemodynamic and electrophysiology of the normal heart and the common congenital and acquired pediatric heart diseases  
- The foetal circulation and changes in circulation at birth  
- Indications for, limitations, benefits, costs and hazards of Electrocardiogram & Chest x-ray, Echocardiogram & Doppler, Diagnostic and interventional cardiac catheterization & angiography, Radionuclide studies - Exercise ECG - Holter monitor  
- Pre- & post-operative needs of pediatric heart patients and long-term complications  
- Incidence and recurrence risk for congenital heart disease  
- Appropriate use of medications commonly used in the treatment of heart disease | - Record and interpret reliably an electrocardiogram in all age groups  
- Interpret a chest X-ray with respect to heart size, contour and pulmonary vascularity | - Common forms of cyanotic & a cyanotic congenital heart disease  
- Cardiac murmurs  
- Congestive heart failure  
- Syncope  
- Cardiac arrhythmia  
- Chest pain  
- Corpulentem (Pulmonary hypertension)  
- Endocarditis, Myocarditis, and Pericarditis  
- Kawasaki disease  
- Rheumatic fever and RHD |
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| CLINICAL PHARMACOLOGY | - Mechanisms of action of drugs in relation to their ability to correct a pathophysiologic state  
- Pharmacokinetics in infants and children  
- Placental transfer and breast milk excretion of drugs  
- Drug interactions  
- Modification of drug dosage in altered pathophysiologic states (renal failure, liver failure)  
- Therapeutic drug monitoring  
- The cost of commonly used drugs; choice of drugs with respect to availability of drug plans; issues related to compliance | (included in other sections) | - Adverse drug reactions  
- Drug toxicity and overdose  
- Management of acute and chronic pain  
- Drug withdrawal |
| DEVELOPMENT AND BEHAVIOUR | - Normal and abnormal development – gross motor, fine motor, language, personal-social and behavioral biological and psychosocial factors affecting development and behavior  
- Understanding of and interpreting psychological and education testing | - Assessment of psychomotor development  
- Counselling parents on normal growth, development and behavior with provision of anticipatory guidance  
- Counselling of parents regarding developmental and behavioral concerns with attention to available community support and resources | - Developmental delay and mental retardation  
- Pervasive developmental disorders/autism spectrum disorders  
- Common behavioral problems  
- Crying infant, infantile colic, sleep disorders, nightmares and night terrors  
- Learning disabilities  
- Attention deficit hyperactivity disorders  
- School avoidance |
| ENDOCRINOLOGY & METABOLISM | - The normal anatomy, and embryology and physiology of the endocrine glands  
- Normal physical growth  
- Physiology of normal and abnormal puberty  
- Disorders affecting the endocrine gland, producing underactivity or over activity  
- Indications and interpretation of endocrine tests  
- Pharmacology of commonly used drugs and hormones | - Bedside measurement of glucose  
- Orchidometry | - Growth retardation  
- Short stature  
- Hypoglycemia  
- Ambiguous genitalia  
- Early/mature sexual development  
- Thyroid disease  
- Pituitary disorders  
- Diabetes mellitus, diabetic ketoacidosis  
- Diabetes insipidus  
- Inappropriate ADH secretion  
- Adrenal disease  
- Hypo-hypercalcaemia  
- Hyperlipidaemias |
| GASTROINTESTINAL, HEPATIC AND BILIARY SYSTEMS | - Normal and abnormal development of the gastrointestinal tract, liver and pancreas  
- Physiology and function of the gastrointestinal tract including liver, biliary tract and pancreas, in normal and abnormal states  
- Pathophysiology of liver failure  
- Indications for diagnostic tests and procedures including: endoscopy, plain abdominal X-rays, upper gastrointestinal and small bowel x-rays, contrast enema, ultrasound and CT scan, radionuclide scan  
- Indications for and interpretation of liver function tests | Interpretation of abdominal X-rays | - Vomiting and regurgitation  
- Abdominal pain (acute/chronic)  
- Diarrhea (acute/chronic)  
- Inflammatory bowel disease  
- Malabsorption  
- Constipation / encopresis  
- Intestinal bleeding  
- Jaundice  
- Liver enlargement  
- Liver dysfunction/failure  
- Abdominal masses  
- Dysphagia |
| GENETICS AND TERATOLOGY | - Modes and molecular basis of inheritance  
- Application of cytogenetics  
- Indications and limitations of prenatal diagnosis  
- Indications and limitations of screening programs for genetic disease  
- Principles of assessment of dysmorphology and syndrome identification  
- Application of molecular diagnosis  
- Common presentations of inborn errors of metabolism  
- Embryological basis of malformation  
- Environmental factors in fetal development | - Construction and interpretation of a pedigree  
- Ability to provide genetic counselling to a family / individual with a known genetic or inherited disorder, or referral to appropriate source | - The dysmorphic child  
- Exposure to a possible teratogen  
- Approaches to and initial investigations of suspected inherited metabolic diseases  
- Common genetic syndromes (e.g. Down syndrome, Turner syndrome, Fragile-X) |
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<tr>
<td><strong>HAEMATOLOGY &amp; ONCOLOGY</strong></td>
<td>- Development, structure and function of the formed elements of the blood and blood-forming organs including the changes in normal values with age - Physiology of factors responsible for hemostasis and thrombosis - Indications for and interpretation of common hematological tests - Pathophysiology of alterations in morphology or quantity of formed elements in blood - Principles underlying transfusion and hyper transfusion of blood and blood products - Pathophysiology of neoplasms including the acute leukemia - Characteristics/principles of investigation of acute leukemia &amp; common tumors of childhood - Social, familial and personal effects of childhood cancer - Techniques for safe administration of chemotherapy - Common side effects of chemotherapy and radiotherapy and their management - Management of the immune-compromised oncology patient - Late effects of cancer therapy - Principles of palliative care</td>
<td>Counseling families faced with life-threatening illness / chronic childhood illness</td>
<td>- Pallor / anaemia - Bleeding - Purpura and petechiae - Lymphadenopathy - Cytopenia - Hepatosplenomegaly - Indications and complications of splenectomy - Acute complications of haemoglobinopathies and red cell disorders</td>
<td>- Metabolic abnormalities including hypoglycemia, hyper / hypocalcaemia - Intra-ventricular hemorrhage - Surgical problems of newborns - Anaemia, hypovolemia - Polycythemia - Bleeding - Apnea - Drug withdrawal - Congenital anomalies - Birth trauma</td>
</tr>
<tr>
<td><strong>INFECTIOUS DISEASES</strong></td>
<td>- Characteristics, epidemiology and pathogenicity of common infectious agents and conditions - Mechanisms of host defence and infection - Pharmacology of anti-microbial agents and interpretation of sensitivity tests for antibiotics - Antimicrobial resistance - Control of communicable diseases, including prevention and immunization - Prevention of congenital and perinatal infections - Nosocomial infections and infection control</td>
<td>Tuberculin skin testing - perform and interpret - Procurement of appropriate specimens for diagnosis of infections</td>
<td>Common infectious diseases (viral, bacterial, fungal, parasitic, protozoan infections) - Infection in the immunocompromised host - Fever without focus - Fever of unknown origin - Perinatal / congenital infections - HIV Infection - Occult bacteremia - Life-threatening infection - Infectious issues relating to travel and immigration</td>
<td>- Fetal growth, development and physiology including the role of the placenta - Aspects of pregnancy, labor and delivery which affect the neonate - Effect of maternal systemic disease on the fetus and newborn - Demographic, medical and psychosocial factors which influence perinatal mortality and morbidity (the high-risk pregnancy) - Process of neonatal adaptation to extra uterine life - Neonatal growth, nutrition, metabolic problems, feeding problems - Aspects of drug therapy unique to the newborn - General principles of care of the newborn: skin, warmth, feeding - Problems encountered in the follow-up of the high-risk neonate - Neonatal resuscitation and stabilization of critically ill newborns - Initial assessment of the newborn, including Apgar score and gestational age - Recognition of the seriously ill newborn - Management of conventional mechanical ventilation and its complications</td>
</tr>
<tr>
<td>TOPIC</td>
<td>KNOWLEDGE</td>
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</table>
| NEUROMUSCULAR SYSTEM         | - Basic embryology, neuroanatomy and neurophysiology of the central nervous system, congenital malformations and common pediatric neurological problems  
- Indications for, appropriate use of, and risks/complications of the following investigations:  
  - Lumbar puncture  
  - EEG  
  - Evoked potentials  
  - Nerve conduction studies and electromyography  
  - Skull and spine x-rays  
  - Ultrasound scan of the head and spine  
  - CT scan  
  - MRI  
  - Radionuclide scan of the head and spine  
- Interpretation of CSF analysis  
- Pharmacology of drugs used in neurological and neuromuscular problems | (included in other sections)                                                                                                                                                                                                                                                                                                                      | - Congenital malformations of the nervous system including the skull  
- Neurocutaneous syndromes  
- Developmental regression  
- Cerebral palsy  
- Seizures & sudden loss of consciousness  
- Breath-holding spells  
- Headaches  
- Raised intracranial pressure  
- Head trauma and sequelae  
- Comatose child  
- Cerebrovascular diseases including intra-cranial, hemorrhage & stroke  
- Weakness and paralysis  
- Paresthesias  
- Disorders of peripheral nerves and muscles  
- Tics  
- Nystagmus, dizziness & vertigo  
- Ataxia |
| NUTRITION                   | - Recommended nutritional requirements during infancy, childhood and adolescence  
- Effect of disease states on nutritional requirements  
- Breastfeeding - Infant feeding  
- Health implications of restricted diets, fad diets, diets determined by custom or socioeconomic situation  
- Indications, physiological basis and complications of parenteral & enteral nutrition | - Prescribe and manage parenteral and enteral nutrition  
- Advise on breastfeeding issues | - Failure to thrive  
- Feeding disorders  
- Obesity  
- Nutritional deficiencies  
- Nutritional excesses |
| OPHTHALMOLOGY               | - Basic anatomy, embryology & physiology of the eye, ocular muscles and visual pathways  
- Aetiology, classification of visual defects in children  
- Screening procedures for vision  
- Congenital abnormalities of the eye and ocular muscles  
- Acquired abnormalities of the eye  
- Ocular manifestations of systemic diseases | Measure visual acuity by use of standard visual acuity charts  
- Interpret bone X-rays including identification of fractures  
- Perform curettage under direct vision of the ear  
- Interpretation of the tympanogram  
- Interpretation of upper airway soft tissue X-rays | - Congenital blindness  
- Cataracts/leukocoria  
- The red eye  
- Anterior uveitis  
- Proptosis  
- Ptosis  
- Strabismus / amblyopia  
- Anomalous acuity  
- Papillae  
- Heterochromia of the iris  
- Nasolacrimal duct obstruction |
| MUSCULOSKELETAL SYSTEM / RHEUMATOLOGY | - Anatomy, structure & function of bone, joint, connective tissues (normally/abnormally)  
- Physiology of normal bone growth and function  
- Recognition of non-inflammatory connective tissue diseases, e.g. Marfan's syndrome, Ehlers-Danlos syndrome  
- Mechanisms of immune responses in rheumatic disease  
- Indications for, and interpretation of laboratory tests on blood and synovial fluid  
- Principles & applications of physical/occupational therapy for musculoskeletal diseases  
- Pharmacology of common anti-inflammatory, corticosteroids & immunosuppressive drugs  
- Effects of chronic rheumatic diseases on physical growth and social development  
- Common radiographic abnormalities in musculoskeletal diseases | - Common congenital abnormalities  
- Joint and limb pain - Joint deformities  
- Common fractures, dislocations or injuries  
- Septic arthritis and osteomyelitis  
- Common gait disorders (limp, torsional and angular deformities of lower limbs)  
- Scoliosis  
- Acute / chronic arthritis  
- Systemic rheumatologic diseases, e.g. systemic lupus erythematosus, juvenile rheumatoid arthritis | - Common congenital abnormalities  
- Joint and limb pain - Joint deformities  
- Common fractures, dislocations or injuries  
- Septic arthritis and osteomyelitis  
- Common gait disorders (limp, torsional and angular deformities of lower limbs)  
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- Acute / chronic arthritis  
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<table>
<thead>
<tr>
<th>TOPIC</th>
<th>KNOWLEDGE</th>
<th>SKILLS</th>
<th>PROBLEMS</th>
</tr>
</thead>
</table>
| RESPIRATORY      | - Embryology, anatomy and pathophysiology of lower airways, lung, diaphragm & chest  
- Pharmacology of drugs used in respiratory diseases  
- Role of: chest X-ray, bronchoscopy, lung biopsy, lung scintigraphy, sleep studies, apnea monitors, pulmonary function studies, sweat test, fluoroscopy, and CT scan of the chest | - Interpretation of pulmonary function tests  
- Demonstrate use of various devices: e.g. spacers, peak flow meters, metered dose inhalers  
- Interpretation of chest X-rays | - Cough, acute & chronic  
- Hemoptysis  
- Dyspnea  
- Wheezing  
- Asthma | - Cystic fibrosis  
- Pneumothorax  
- Pleural effusions  
- Adult respiratory distress syndrome  
- Mediastinal & intrathoracic masses |
| SKIN AND ALLIED  | - Anatomy and pathophysiology of the skin, hair, nails and mucous membranes  
- Pigmentary, inflammatory and immune responses of the skin  
- Pharmacology of commonly used dermatologic medications  
- Indications for skin biopsy | (included in other sections) | - Acne  
- Eczema and other dermatitis  
- Infections of the skin  
- Vesiculobullous eruptions  
- Papulosquamous eruptions  
- Alopecia  
- Pigmentary and vascular disorders of the skin |
| TISSUES          | - Pharmacology of psychotropic and anti-depressant medications  
- Availability of and access to community-based mental health resources  
- Biological, psychosocial and socioeconomic factors affecting mental health  
- Indications for hospitalization | - Recognition of the impact of family function on the mental health of the child  
- Ability to distinguish between organic and non-organic causes of psychiatric dysfunction | - Mood disorders / depression  
- Anxiety  
- Attention deficit and hyperactivity  
- Conduct disorders, oppositional defiant behavior  
- Violent behavior  
- Family dynamics and psychological adjustment to family stress  
- Personality traits  
- Psychoses  
- Attempted suicide  
- Emotional abuse  
- Adjustment to life stresses  
- Obsessive compulsive disorders |
| MENTAL HEALTH    | - Preoperative assessment  
- Indications for appropriate surgical referrals  
- Perioperative management, including: fluids, steroids, antibiotics  
- Principles of peri and post-operative management, including pain management | (included in other sections) | - Hernias  
- Bowel obstruction  
- The acute abdomen  
- Appendicitis  
- Acute scrotal pain/abscess |
Clinical Research

Residents are required to present a research through final year thesis and for this purpose, workshops are held as follows:
- Research methodology (3 days)
- Literature review & Refworks (1 day)
- SPSS (Basic Statistics)

The goal of these workshops is to understand and able to apply the following:
Using electronic databases such as Medline & Internet to conduct literature searches and to locate information
- Critically appraise/evaluate relevant literature, reviews and new techniques/technologies
- Use word processors, databases, spreadsheets and statistical packages to produce statistical analysis & research papers
- Conduct a literature review
- Develop an hypothesis to be tested
- Choose an appropriate research methodology and design a research study
- Write a grant application to fund a research project.
- Apply for ethics committee approval for a clinical or laboratory based study
- Collect, collate and interpret data
- Apply basic statistical analysis to clinical data
- Develop an outline structure for a research paper
- Write a literature review for a research paper
- Apply the developed outline to write a research paper
- Searching the literature and data-bases purposefully
- Appraising critically relevant articles and reports
- Interpreting findings and consider their applications to other contexts
- Know how to select and draw on clinical evidence to inform practice
- Be able to define the following terms:
  - Clinical significance
  - Statistically significant / insignificant
  - Variability
  - Biological variability
  - Laboratory variability
  - Observer variability
  - Data types: categorical, continuous, qualitative, quantitative, discrete
- Understand the following methods of, and terms associated with, data collection:
  - Epidemiological studies
  - Randomized controlled & crossover clinical trials
  - Randomized controlled laboratory study
  - Observational studies
  - Discrete and continuous variables
  - Sample size determination
- Recognize and understand the following concepts of problems associated with data:
  - Bias: confounding - measurement - sampling
  - Randomization
  - Stratification
  - Blindness (masking)
  - Relevance of sample size to the ultimate
  - Outcome of the statistical analysis
  - Understand the significance & limitations of measures of central tendency:
    - Mean, median, mode
    - Variance
    - Co-variance
    - Standard deviation
    - Confidence interval
  - Meta-analysis
  - Absolute risk
    - Absolute risk difference
    - Absolute risk reduction
    - Attributable risk
    - Etiologic fraction
    - Relative Risk
- Getting Research skills:
  - Choosing a topic for research
  - Having a detailed literature review for this purpose
  - Designing a research as per standard methodology
  - Choosing a mentor on the related field
  - Finalize the research proposal and get both scientific and ethical approval
  - The research proposal will consist of at least of Title page, Specific Aims
  - Introduction/Background and Significance
  - Objectives and Hypothesis
  - Research Design and Methodology
  - References / Bibliography
  - Conduct the research through data gathering, survey, or any standard tool
  - Analyze the data
  - Present the data on a thesis as per DRTP thesis guidelines, which is in line with Arab Board requirements.
**Each thesis must be arranged in the following order:**
- Title Page (Sample A). Do not place a page number on this page.
- Dedication. Do not place a page number on this page.
- Acknowledgements and/or Preface. Do not place a page number on this page.
- Abstract (Sample B). Do not place a page number on this page.
- Table of Contents. Do not place a page number on this page.
- List of Tables, Figures, Illustrations/Maps/Slides, List of Supplemental Files such as multimedia files.
- List of abbreviations
- Text of the Thesis. All pages from the first page of text through the bibliography or Vita, if included, are numbered consecutively in Arabic numerals, beginning with Arabic numeral “1” on the first page of the thesis text.
- Introduction
- Material and Methods
- Results
- Discussion
- Limitations
- Conclusion
- Appendix or Appendices. Continue text numbering with Arabic numerals.
- References. Vancouver or Harvard standard style.
- Publications (please insert the full text of your published paper if you have any)
- Curriculum Vita. Continue text numbering with Arabic numerals.

**Thesis Formatting and Layout Requirements:**

<table>
<thead>
<tr>
<th><strong>Page Size</strong></th>
<th>Page size should be standard A4 size (8.50 x 11.00).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Margins</strong></td>
<td>1 inch on all sides, including page numbers.</td>
</tr>
<tr>
<td><strong>Page Nos.</strong></td>
<td>Should be at least 1&quot; from the below margins edges of the page, as appears in this document.</td>
</tr>
<tr>
<td><strong>Spacing</strong></td>
<td>Preliminary pages and text must be double-spaced or 1.5-spaced. Under certain conditions, quotations may be single spaced. Table of Contents and lists with lengthy entries may be single spaced with a double space between entries. References may be single spaced, with a double space between entries.</td>
</tr>
<tr>
<td><strong>Page Alignment</strong></td>
<td>Each new chapter/ major section (i.e. Chapter 1 - 2, Appendix, Bibliography, Vita) must begin on a new page.</td>
</tr>
<tr>
<td><strong>Pagination</strong></td>
<td>All text page in the thesis is numbered. All text page numbers in the thesis must be centered under the text in the same location on each page and located at least one inch from the bottom of the page.</td>
</tr>
<tr>
<td><strong>Word Processing</strong></td>
<td>Your final thesis must be correct in spelling and punctuation and presented in a consistent, structured format. A single, legible font must be used throughout the thesis, the only exceptions being in tables, figures, graphs, appendices, foot notes, and supplemental files. The font size should be 12-pt. Accuracy and consistency is required in format of the thesis.</td>
</tr>
<tr>
<td><strong>Tables &amp; Illustrations</strong></td>
<td>Pages carrying illustrative material must be given page numbers appropriate to their place in the document. Illustrative material may not be inserted after the document has been numbered and given numbers such as “10a.” All tables, figures, illustrations, and other types of examples included and referenced in the text of the thesis should be numbered for identification. There should be no duplication of these numbers; i.e., no two tables should be assigned the same number. Figures may be numbered in one of two ways: consecutively throughout the document (Table 1, Table 2, Table 3, etc.), or double-numbered so that illustrations’ numbers reflect their locations in the document (Fig. 9.3 is the third figure in Chapter 9, or Fig. A2 is the second figure in Appendix A.)</td>
</tr>
<tr>
<td><strong>Captions &amp; legends</strong></td>
<td>To be placed on the same page with the figure, graph, table or illustration they describe. In order to fit both figure and caption on the same page, captions may be single-spaced, margins may be decreased to one inch, and figures may be reduced in size to fit. If the figures are reduced from their original size, then the page number must be added after the reduction so as not to alter its size. If there is no other way to manage the amount of material to be shown, the caption and figures should be side-by-side in continuous view. This method should only be used in the rare instance where all of the pertinent material will not fit on the same page. Figures, captions, and page numbers must be easily readable when the electronic document is viewed at 100 percent.</td>
</tr>
<tr>
<td><strong>Copies Required</strong></td>
<td>Residents upload a single pdf file of their thesis to Research website (e.g. thesis submission site). The electronic pdf file serves as the DHA archival copy of the thesis. As an extra measure of security, students are strongly encouraged to keep a copy of their approved thesis and to provide an additional copy to their thesis supervisor or department/program library, if applicable. By keeping an electronic backup on hand, students can easily provide scholars with a copy of the thesis during the time between submission and publication, if necessary. A paper copy of the thesis is required by the AAC.</td>
</tr>
<tr>
<td><strong>Footnote, Citations, References &amp; Bibliography</strong></td>
<td>Each thesis must include a reference, or bibliography section. This section may be called “Bibliography” or “References”. The bibliography is the last required section of the thesis and the last section heading listed on the Table of Contents unless an optional Vita page is included. When a Vita page is included, the bibliography immediately precedes the Vita at the end of the thesis. The bibliography must indicate materials actually used, such as articles, chapters of books, websites, etc.</td>
</tr>
</tbody>
</table>
References & Learning Resources

Textbooks & Resources

Suggested texts and resources are meant as a guide only.
It is recognised that learning materials will be individualized based on need and learning style.

- Neonatal-Perinatal Medicine: Diseases of the Foetus & Infant, AA Fanaroff & RJ Martin
- Paediatric Kidney Disease Vol 1 & 2, Edelman
- Smith’s Recognizable Patterns of Human Malformation
- Canadian Paediatric Society www.cps.ca
- American Academy of Pediatrics www.aap.org
- On-line CME (AAP) www.pedialink.org
- Neonatology www.neonatology.org
- Harriet Lane Links www.med.jhu.edu/peds/neonatology/poi

References

- Policies & Procedures for Certification & Fellowship, Royal College of Physicians & Surgeons of Canada, January 2001
- General Standards of Accreditation, Royal College of Physicians and Surgeons of Canada, September 2006
- General Information Concerning Accreditation of Residency Programs, Royal College of Physicians and Surgeons of Canada, September 2006
- Specific Standards of Accreditation for Residency Programs in Pediatrics, Royal College of Physicians and Surgeons of Canada, 2006
- Objectives of Training & Training Requirements in Pediatrics, Royal College of Physicians & Surgeons of Canada, 2006
- Ezimokhai, M., ‘Specialist Training Program in Obstetrics and Gynaecology’, Five Year Program. UAE University, 1999, 2004, 2005
- Program Requirements for Residency Education in Pediatrics, ACGME (Accreditation Council for Graduate Medical Education) July 2001.
- Uduman S. Residency Program in Pediatrics, DHA 2005