CURRICULUM/STATUTES & REGULATIONS
FOR
5 YEARS DEGREE PROGRAMME
IN
DEVELOPMENTAL PAEDIATRICS
(MD DEVELOPMENTAL PAEDIATRICS)

UNIVERSITY OF HEALTH SCIENCES, LAHORE

STATUTES

Nomenclature Of The Proposed Course

The name of degree programme shall be MD Developmental Paediatrics. This name is well recognized and established for the last many decades worldwide**.**

Course Title:

MD Developmental Paediatrics

Training Centers

Departments of Paediatric Medicine (accredited by UHS) in affiliated institutes of University of Health Sciences Lahore.

Duration of Course

The duration of MD Developmental Paediatrics course shall be five (5) years with structured training in a recognized department under the guidance of an approved supervisor.

After admission in MD Developmental Paediatrics Programme the resident will spend first 6 Months in the relevant Department of Developmental Paediatrics as **Induction period** during which resident will get orientation about the chosen discipline and will also participate in the **mandatory workshops** (Appendix E). The research project will be designed and the **synopsis** be prepared during this period.

On completion of Induction period the resident will start formal training in the Basic Principles of Paediatric Medicine for 18 Months, during this period the resident must get the research synopsis approved by AS&RB. At the end of 2 year, the candidate will take up Intermediate Examination.

During the 3rd, 4th & 5th years, of the Program, there will be two components of the training

1) Clinical Training in Developmental Paediatrics
2) Research and Thesis writing

The candidate will undergo clinical training to achieve the educational objectives of M.D. Developmental Paediatrics Programme (knowledge & Skills) alongwith rotations in the relevant fields. during 4th & 5th year of the Programme.

The clinical training shall be competency based. There shall be generic and specialty specific competencies and shall be assessed by continuous Internal Assessment. (Appendix F&G).

The Research Component and thesis writing shall be complete over the four years duration of the Programme. Candidates will spend total time equivalent one calendar year for research during the training. Research can be done as one block or in small periodic rotation as long as total research time is equivalent to one calendar year.

Admission Criteria

Applications for admission to MD Training Programs of University will be invited through advertisement in print and electronic media mentioning closing date of applications and date of Entry Examination.

Eligibility: The applicant on the last date of submission of applications for admission must possess the:

i) Basic Medical Qualification of MBBS or equivalent medical qualification recognized by Pakistan Medical & Dental Council.

ii) Certificate of one year's House Job experience in institutions recognized by Pakistan Medical & Dental Council Is essential at the time of interview. The applicant is required to submit Hope Certificate from the concerned Medical Superintendent that the House Job shall be completed before the Interview.

iii) Valid certificate of permanent or provisional registration with Pakistan Medical & Dental Council.

Registration and Enrollment

- As per policy of Pakistan Medical & Dental Council the number of PG Trainees/ Students per supervisor shall be maximum 05 per annum for all PG programmes including minor programmes (if any).
- Beds to trainee ratio at the approved teaching site shall be at least 5 beds per trainee.
- The University will approve supervisors for MD courses.
- Candidates selected for the courses after their enrollment at the relevant institutions shall be registered with UHS as per prescribed Registration Regulations.

Accreditation Related Issues of the Institution

A. Faculty

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMDC).

B. Adequate Space

Including class-rooms (with audiovisual aids), demonstration rooms, computer lab and clinical pathology lab etc.

C. Library

Departmental library should have latest editions of recommended books, reference books and latest journals (National and International).

- Accreditation of Developmental Paediatrics training program can be suspended on temporary or permanent basis by the University, if the program does not comply with requirements for residents training as laid out in this curriculum.
- Program should be presented to the University along with a plan for implementation of curriculum for training of residents.
- Programs should have documentation of residents training activities and evaluation on monthly basis.

- To ensure a uniform and standardized quality of training and availability of the training facilities, the University reserves the right to make surprise visits of the training program for monitoring purposes and may take appropriate action if deemed necessary.

AIMS AND OBJECTIVES OF THE COURSE

AIM

The aim of five years MD programme in Developmental Paediatrics is to train residents to acquire the competency of a specialist in this field so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

GENERAL OBJECTIVES

MD Developmental Paediatrics training should enable a resident in:

1. **History and Physical Examination**

   The effective acquisition of a medical history and the performance of a comprehensive physical examination in paediatric patients with acute and chronic diseases necessitating hospital admission.

2. **Case Presentations**

   Students are expected to effectively record an initial history and physical examination and follow-up notes as well as deliver comprehensive oral presentations to their team members based on these written documents.

3. **Test Interpretation**

   Basic understanding of routine laboratory and ancillary tests, including complete blood count, chemistry panels, ECG, chest x-rays, pulmonary function tests, and body fluid cell counts. In addition, students will properly understand the necessity of incorporating sensitivity, specificity, and pre-test probability in the ordering of individual tests in the context of evaluating paediatric patients' signs and symptoms.

4. **Diagnostic Decision Making**

   The formulation of a differential diagnosis with up-to-date scientific evidence and clinical judgment using history and physical examination data and the

development of a prioritized problem list to select tests and make effective therapeutic decisions.

5. **Therapeutic Decision Making**

This objective includes assessing the risks, benefits, and costs of varying, effective treatment options; involving the patient in decision-making via open discussion; selecting drugs from within classes; and the design of basic treatment programs and using critical pathways when appropriate.

6. **Core General Paediatric Concepts**

The development of a basic understanding of core General Paediatric concepts.

7. **Communication and Relationships with Patients and Colleagues**

The establishment of rapport with paediatric patients by identifying important psychosocial issues and providing patient-centered care through specific medical treatment as well as education. In addition, the development of effective communication skills demonstrating respect, compassion and integrity in working relationships with fellow students, house staff, faculty, nurses, and ancillary personnel. In each of these components, sensitivity to racial and cultural diversity should be demonstrated.

8. **Bioethics of Patient Care**

The development of a functional understanding of informed consent, advanced directives, and the physician-patient relationship.

9. **Self-directed Learning**

The identification of key information resources and the utilization of the medical literature to expand one's knowledge base and to search for answers

to medical problems. They will keep abreast of the current literature and be able to integrate it to clinical practice.

10. **Preventive Medicine**

The promotion of health via adult immunizations, periodic health screening, and risk factor assessment and modification.

11. **Research and Scientific Knowledge**

Practice evidence-based learning with reference to research and scientific knowledge pertaining to their discipline.

SPECIFIC LEARNING OUTCOMES

The developmental approach relies heavily on the pediatrician's knowledge of normal child development and on skills of observation and communication. It requires specific skill in integrating information drawn from three main sources: (1) observations of the child's developmental competencies and behavior with others; (2) formal examination/assessment of the child's functioning; and (3) interviews with children and families.

A. Knowledge of Child Development

The content base of the developmental approach is, first and foremost, child development. It must include (1) normative, and observable landmarks of development; (2) theoretical frameworks of human development; and (3) familiarity with common disorders and indicators of risk to healthy development.

1. Specific, Observable Behavioral Phenomena and Developmental Landmarks

These make up the visible topography of child development for the resident who most often comes to his/her task without the personal experience of witnessing a child grow up. Developmental screening instruments are essential teaching tools with which to inculcate the landmarks that chart particular developmental streams.

2. Theoretical/Research-Based Frameworks of Child Development

Although in-depth study of the foundation and research based theories of child development—e.g., those of Erikson, Piaget, Gesell, Chess and Thomas, Bowlby, and others—are difficult to achieve given the time pressures of residency, a basic grasp of these frameworks is necessary to allow the trainee to sew together the observable pieces, noted above, into a larger understandable quilt.

3. Clinically Important Clusters of Behaviors or Developmental Trends

In child development, as with other subspecialty areas, pediatric residents must become familiar with a full range of symptom clusters and disorders that parents commonly describe and children of all ages display. Within each symptom cluster, pediatric residents must learn the range of risk and severity that may exist—e.g., encoparesis as a simple, medically treatable problem or as a chronic and entrenched pattern with significant psychosocial implications. Along with this, training curricula must distinguish those symptom clusters and disorders that are within the

pediatrician's purview from those, which require referral and subspecialty evaluation. Faculty modeling and guidance is essential in teaching the resident to (1) describe and define the problem; (2) consider its origins, severity, and impact; (3) set reasonable goals for management; (4) determine the role of the pediatrician; and (5) consider indications for consultation with and/or referral to other professional colleagues.

B. Developmental Assessment

1. Assessment of the Child

Developmental pediatrics assessment inevitably requires the consideration of multiple domains of interacting influences: genetic, physiological, neurodevelopmental, temperamental, cognitive, speech/language-based, affective, social, family, community, and cultural. Thus the developmental pediatrics approach challenges the pediatrician to think broadly and flexibly and to resist the temptation to decide prematurely on a diagnostic impression — e.g., diagnosing "attention-deficit hyperactivity disorder" (ADHD) without knowledge of a child's school and learning performance.

2. Assessment of the Child in the Family

No child assessment is adequate without knowledge of the child's family and the child in the family. In ongoing health supervision, a holistic understanding of the child's family and the role the child plays in the family permits individualized counseling of anticipatory guidance issues (e.g., feeding, sleep, discipline). Many general aspects of a child/family assessment can be ascertained through an interview.

C. Treatment and Management in Developmental Pediatrics

Counseling is the central treatment methodology in developmental pediatrics. In a real sense, pediatricians offer themselves in attempting to understand and to guide children and families. Pediatric counseling may be thought of as primarily educational or as primarily facilitative.

REGULATIONS

Scheme of the Course

A summary of five years course in MD Development Paediatrics is presented as under:

Course Structure	Components	Examination
At the End of 2nd year of MD Developmental Paediatrics Programme	• Basic Principles of Paediatric Medicine • Relevant Basic Sciences (Physiology, Pharmacology, Pathology)	**Intermediate Examination** at the end of 2nd Year of M.D. Developmental Paediatrics Programme Written = Marks 300 Clinical, TOACS/OSCE & Oral=Marks 200 **Total = 500 Marks**

At the end of 5th year of MD Developmental Paediatrics Programme	**Clinical component** • **Professional Education in Developmental Paediatrics :** Training in Developmental Paediatrics with Compulsory/ Optional rotations **Research component** Research work / Thesis writing must be completed and thesis be submitted atleast 6 months before the end of final year of the programme.	**Final Examination** at the 5th year of MD Developmental Paediatrics Programme Written = 500 Marks Clinical, TOACS/OSCE & Oral =500 Marks CIS = 100 Marks Thesis Evaluation = 400 Marks **Total = 1500 Marks** Thesis evaluation and defence at the end of 5th year of M.D. Developmental Paediatrics Programe.

Intermediate Examination of MD Developmental Paediatrics

All candidates admitted in MD Developmental Paediatrics course shall appear in Intermediate Examination at the end of 2nd calendar year.

Eligibility Criteria:

The candidates appearing in Intermediate Examination of the M.D. Developmental Paediatrics Programme are required:

a) To have submitted certificate of completion of mandatory workshops.
b) To have submitted certificate / certificates of completion of first two years of training from the supervisor / supervisors of rotations.
c) To have submitted CIS assessment proforma from his/her own supervisor on 03 monthly basis and also from his/her supervisors during rotation, achieving a cumulative score of **75%**.
d) To have submitted certificate of approval of synopsis or undertaking / affidavit that if synopsis not approved with 30 days of submission of application for the Intermediate Examination, the candidate will not be allowed to take the examinations and shall be removed from the training programme.
e) To have submitted evidence of payment of examination fee.

Intermediate Examination Schedule and Fee

a) Intermediate Examination at completion of two years training, will be held twice a year.
b) There will be a minimum period of 30 days between submission of application for the examination and the conduction of examination.
c) Examination fee will be determined periodically by the University.
d) The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
e) The Controller of Examinations will issue Roll Number Slips on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee.

At the end of 2nd year M.D. Developmental Paediatrics Programme

Written Examination	=	300 Marks
Clinical, TOACS/OSCE & Oral	=	200 Marks
Total	=	500 Marks

Written Paper = 300 Marks

MCQs = 100 (2 Marks each MCQ)

SEQs = 10 Marks (10 Marks each SEQ)

Clinical, TOACS/OSCE & Oral = Total Marks 200

a) 4 short Cases = 100 marks
b) Long Case = 50 marks
c) Toacs/OSCE & Oral = 50 marks

Written Paper

Principles of Paediatric Medicine	=	70 MCQs	7 SEQs
Specialty	=	10 MCQs	1 SEQ
Basic Sciences	=	20 MCQs	2 SEQs
Physiology	=	8 MCQs	1 SEQ

Pharmacology	=	4 MCQs	-------
Pathology	=	8 MCQs	1 SEQ

Declaration of Results

The Candidate will have to score 50% marks in written, clinical and Toacs/OSCE & Oral components and a cumulative score of 60% to be declared successful in the Intermediate Examination.

A maximum total of four consecutive attempts (availed or unavailed) will be allowed in the Intermediate Examination during which the candidate will be allowed to continue his training program. If the candidate fails to pass his Intermediate Examination within the above mentioned limit of four attempts, the candidate shall be removed from the training program, and the seat would fall vacant, stipend/ scholarship if any would be stopped.

Final Examination of MD Developmental Paediatrics

All candidates admitted in MD Developmental Paediatrics course shall appear in Final (clinical) examination at the end of structured training (end of 5th calendar year), and having passed the Intermediate examination.

Eligibility Criteria:

To appear in the Final Examination the candidate shall be required:

i) To have submitted the result of passing Intermediate Examination.

ii) To have submitted the certificate of completion of training, issued by the Supervisor will be mandatory.

iii) To have achieved a cumulative score of 75% in Continuous Internal assessments of all training years.

iv) To have got the thesis submitted and will then be eligible to appear in Final Examination.

v) To have submitted no dues certificate from all relevant departments including library, hostel, cashier etc.

vi) To have submitted evidence of submission of examination fee.

Final Examination Schedule and Fee

a) Final examination will be held twice a year.

b) The candidates shall have to satisfy eligibility criteria before permission is granted to take the examination.

c) Examination fee will be determined and varied at periodic intervals by the University.

d) The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.

e) The Controller of Examinations will issue an Admittance Card with a photograph of the candidate on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee. This card will also show the Roll Number, date / time and venue of examination.

Components of Final Examination

Written Part of Final Examination	Total marks 500
Clinical, TOACS/OSCE & Oral	Total marks 500
Contribution of CIS to the Final Examination	Total marks 100
Thesis Evaluation	Total marks 400

Written Part of Final Examination

a) There will be two written papers which will cover the whole syllabus of the specialty of training with total marks of 500.

b) The written examination will consist of 200 single best answer type Multiple Choice Questions (MCQs) and 10 Short Essay Questions (SEQs). Each correct answer in the Multiple Choice Question paper will carry 02 marks, but an incorrect response will result in deduction of 0.5 mark. Each Short Essay Question will carry 10 marks.

c) The Total Marks of the Written Examination will be 500 and to be divided as follows:
   - Multiple Choice Question paper Total Marks = 400
   - Short Essay Question paper Total Marks = 100

d) The candidates securing a score of 50% marks in multiple choice question paper and short essay question paper will pass the written part of the final examination and will become eligible to appear in the clinical and oral examination.

e) The written part result will be valid for three consecutive attempts for appearing in the Clinical and Oral Part of the Final Examination. After that the candidate shall have to re-sit the written part of the Final Examination.

Clinical, TOACS/OSCE & Oral:

a) The Clinical, TOACS/OSCE & Oral will consist of 04 short cases, 01 long case and Oral Examination with 01 station for a pair of Internal and

   External Examiner Each short case will be of 07 minutes duration, 05 minutes will be for examining the patient and 02 minutes for discussion. The Oral Examination will consist of laboratory data assessment, interpretation of Radiology images, ECG and others.

b) The Total Marks of Clinical, TOACS/OSCE & Oral will be 500 and to be divided as follows:

Short Cases	Total Marks = 200
Long Case	Total Marks = 100
Clinical, TOACS/OSCE & Oral	Total Marks = 200

c) A panel of four examiners will be appointed by the Vice Chancellor and of these two will be from university whilst the other two will be the external examiners. Internal examiner will act as a coordinator. In case of difficulty in finding an Internal examiner in a given subject, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person with appropriate qualification and experience, outside the University as an examiner.

d) The internal examiners will not examine the candidates for whom they have acted as Supervisor and will be substituted by other internal examiner.

e) The candidates scoring 50% marks in each component of the Clinical & Oral Examination will pass this part of the Final Examination.

f) The candidates will have two attempts to pass the final examination with normal fee. A special administration fee of Rs.10,000 in addition to normal fee or the amount determined by the University from time to time shall be charged for further attempts.

Declaration of Result

For the declaration of result

I. The candidate must get his/her Thesis accepted.

II. The candidate must have passed the final written examination with 50% marks and the clinical & oral examination securing 50%

marks. The cumulative passing score from the written and clinical/ oral examination shall be 60%. Cumulative score of 60% marks to be calculated by adding up secured marks of each component of the examination i.e written and clinical/ oral and then calculating its percentage.

III. The MD degree shall be awarded after acceptance of thesis and success in the final examination.

IV. On completion of stipulated training period, irrespective of the result (pass or fail) the training slot of the candidate shall be declared vacant.

Submission / Evaluation of Synopsis

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on university website.

2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
3. Synopsis of research project shall be submitted by the end of the 2nd year of MD program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for consideration by the Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

Submission of Thesis

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.
2. The minimum duration between approval of synopsis and submission of thesis shall be one year, but the thesis cannot be submitted later than 8 years of enrolment.
3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.
4. The research thesis will be submitted along with the fee prescribed by the University.

Thesis Examination

a) The candidate will submit his/her thesis at least 06 months prior to completion of training.

b) The Thesis along with a certificate of approval from the supervisory will be submitted to the Registrar's office, who would record the date / time etc. and get received from the Controller of Examinations within 05 working days of receiving.

c) The Controller of Examinations will submit a panel of eight examiners within 07 days for selection of four examiners by the Vice Chancellor. The Vice Chancellor shall return the final panel within 05 working days to the Controller of Examinations for processing and assessment. In case of any delay the Controller of Examinations would bring the case personally to the Vice Chancellor.

d) The Supervisor shall not act as an examiner of the candidate and will not take part in evaluation of thesis.

e) The Controller of Examinations will make sure that the Thesis is submitted to examiners in appropriate fashion and a reminder is sent after every ten days.

f) The thesis will be evaluated by the examiners within a period of 06 weeks.

g) In case the examiners fail to complete the task within 06 weeks with 02 fortnightly reminders by the Controller of Examinations, the Controller of Examinations will bring it to the notice of Vice Chancellor in person.

h) In case of difficulty in find an internal examiner for thesis evaluation, the Vice Chancellor would, in consultation with the concerned Deans, appoint any

relevant person as examiner in supersession of the relevant Clause of the University Regulations.

i) There will be two internal and two external examiners. In case of difficulty in finding examiners, the Vice Chancellor would, in onsultation with the concerned Deans, appoint minimum of three, one internal and two external examiners.

j) The total marks of thesis evaluation will be 400 and 60% marks will be required to pass the evaluation.

k) The thesis will be considered accepted, if the cumulative score of all the examiners is 60%.

l) The clinical training will end at completion of stipulated training period but the candidate will become eligible to appear in the Final Examination at completion of clinical training and after acceptance of thesis. In case clinical training ends earlier, the slot will fall vacant after stipulated training period.

Award of MD Developmental Paediatrics Degree

After successful completion of the structured courses of MD Developmental Paediatrics and qualifying Intermediate and Final Examinations (Written, Clinical, TOACS/OSCE & Oral and Thesis), the degree with title MD Developmental Paediatrics shall be awarded.

COURSE OUTLINE

MD Developmental Paediatrics

1. Physiology

Cellular organization, structure function correlations and physiological alterations in the endocrine organ systems of body

Structural and Functional Organization of the Cells of Body

- Concept of cells as the structural, functional and genetic units of the body.
- Cell components with their role in cell function.
- Diversity of cell morphology as related to the varied functional demands. Physical activities of the living cells, intracellular movements, cellular locomotion, endocytosis and exocytosis.
- Basic concepts of the principles of transport through cell membrane, membrane potential and action potential.

Blood:

- Blood groups (ABO, Rh and other systems), blood transfusion and exchange transfusion.
- Precautions and hazards of blood transfusion.
- Plasma proteins, their production and functions.
- Diagnosis of various types of anaemias and leukaemias
- Values of various components of blood in different age groups e.g. haemoglobin, WBCs, hormones etc.
- Interpretation of complete blood picture, haematological changes in infectious and non infectious paediatric diseases

Cardiovascular System:

- Mechanism of production of heart sounds, their location, characters and relationship with the cardiac cycle.
- The normal electrocardiogram and characters of its various components. Significance of its parts, voltage and calibration, principles and methods of recording, electrocardiographic leads and general information obtained from ECG.
- Physiology and abnormalities of apex beat.
- Echocardiography, exercise tolerance test and the basis of ETT.
- Patho-physiology of cardiac failure, valvular heart disease and hypertension. Interpretation of data of diagnostic tests.

- Arterial blood pressure, measurement and regulation.
- Mechanism of haemorrhage and shock.
- Circulation through special organs: coronary circulation, cerebral circulation and pulmonary circulation.

Respiration:

- Pulmonary ventilation
- Mechanics of respiration, pulmonary volumes, capacities and pressures.
- Transport and exchange of oxygen and carbon dioxide.
- Physiology of respiratory insufficiencies, hypoxia, dyspnoea, asphyxia and hypercapnia
- Exercise hypoxia and cyanosis
- Physiological changes due to altitude and space travel
- Principles and methods of artificial respiration.
- Principles of pulmonary function tests.
- Interpretation of data of diagnostic tests.
- Cardiopulmonary resuscitation.
- Patho-physiology of respiratory failure.

Fluid Balance:

- Basic requirements of fluid and electrolytes at different ages
- Mechanisms of homeostasis
- Influence of disease states
  -renal
  -cardiac
  -gastrointestinal
  -trauma
- Abnormalities encountered in disease

Acid-Base Balance:

- Basic requirements of fluid and electrolytes at different ages
- Mechanisms of homeostasis
- Influence of disease states

Renal function:

- Renal circulation
- Glomerular filtration
- Tubular function
- Water excretion
- Acidification of urine
- Regulation of Na + and K + excretion
- Regulation of extracellular fluid composition and volume

Endocrinology:

- General concepts of chemical nature, mechanism, site of action and functions of hormones of the hypothalamus, pituitary, thyroid, adrenal, parathyroid, pancreas, and pineal glands, ovaries and testis.
- Effects of hypo-and hyperactivity of the endocrine glands.
- Production and functions of hormones related to the sex characters in the male and female child.

Gastrointestinal function:

- Digestion and absorption
- Regulation of gastrointestinal function
- Motility: mastication, swallowing, gastric motility, intestinal motility and gall bladder motility.

Central Nervous System

- Motor cortex corticospinal and corticobulbar system.
- Basal ganglia
- Cerebellum

Autonomic Nervous System

- Overall functions of sympathetic and parasympathetic nervous systems. Autonomic reflex activity.

Functional Aspects Of The Nervous System

- Sensory activity: Peripheral sensory receptors, sensory pathways, physiology of pain and disorders of sensations.
- Motor activity: corticospinal and extra-corticospinal pathways, cerebellum and Vestibular system.
- Motor neurons, motor units and neuromuscular junction.
- Disorders of motor activity.

Muscle and nerve physiology.

- Reflex activity: Monosynaptic stretch reflexes, polysynaptic withdrawal reflexes, general characters of reflexes.

- Electroencephalogram and its uses.
- Sleep, types, physiological changes during sleep.
- Speech mechanism and its disorders.
- Cerebrospinal fluid, cerebral circulation, metabolism and functions.
- Blood brain and blood CSF barriers.

Vitamins

- Daily requirements, effects of deficiency and hypervitaminosis.
- Salient morphologic features of diseases related to deficiency or excess of vitamins.

Minerals

- Sources of calcium, phosphorous, iron, iodine, fluorine, magnesium and manganese.
- Trace elements and their clinical importance.
- Absorption and factors required for it.
- Functions and fate.

Carbohydrates

- Digestion, absorption and utilization of dietary carbohydrates. Glucose tolerance test.
- Glycogenesis, glycolysis, gluconeogenesis, glycogenolysis, processes with the steps involved and effects of hormones.

Lipids

- Digestion, absorption, utilization and control.
- Fatty acid oxidation with steps involved.
- Ketogenesis and its significance.
- Lipotropic factors and their actions. Lipoproteins, types and importance.

Proteins and Amino Acids

- Digestion, absorption, utilization and control.
- Fate of amino acids.
- Urea formation with steps involved.
- Functions and effects of deficiency.

Balanced Diet

- Nutritional requirements at different ages
- Requisites of an adequate diet.

- Role of carbohydrates, fats, proteins, minerals, vitamins and water in diet.
- Principles of nutrition as applied to medical problems

2. Pharmacology

- Mechanisms of Drug Action
- Pharmacokinetics
- Pharmacokinetic Process
    - Absorption
    - Distribution
    - Metabolism
    - Desired Plasma Concentration
    - Volume of Distribution
    - Elimination
    - Elimination rate constant and half life
    - Creatinine Clearance
- Drug Effect
    - Beneficial Responses
    - Harmful Responses
    - Allergic Responses
- Drug Dependence, Addiction, Abuse and Tolerance
- Drug Interactions
- Basic concepts of pharmacokinetics and dynamics of drugs prescription in pregnancy and in children
- Autonomic Pharmacology

3. Pathology

Pathological alterations at cellular and structural level along with brief introduction of Basic Microbiology and Haematological pathology as related to medicine

Inflammation

Acute inflammation

- Cellular components and chemical mediators of acute inflammation
- Exudates and transudate
- Sequelae of acute inflammation

Chronic inflammation

- Etiological factors and pathogenesis
- Distinction between acute and chronic (duration) inflammation
- Histologic hallmarks
- Types of chronic inflammation, non-granulomatous and granulomatous, and their causes

Haemodynamic disorders

- Etiology, pathogenesis, classification and morphological and clinical manifestations of Edema, Haemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia
- Shock; classification etiology, and pathogenesis, manifestations.
- Compensatory mechanisms involved in shock
- Pathogenesis and possible consequences of thrombosis
- Difference between arterial and venous emboli

Immunity and Hypersensitivity

- Immunity
- Immune response
- Protective immunity to microbial diseases
- Immunological tolerance, autoimmunity and autoimmune diseases.
- Hypersensitivity
- Immunodeficiency disorders
- Immunoprophylaxis & Immunotherapy

Haematology

- Normal paediatric blood picture & variations in diseases

Microbiology

- A brief account of the classification of microorganisms.
- Role of Microbes In Various Paediatric Diseases
- Infection source

Bacterial Growth and Death

- Names, habitat, modes of transmission/infection, pathogenic mechanism and pathological changes produced by bacteria, commonly causing paediatric diseases in Pakistan
- Gram staining and AFB staining, Culture of blood and fluid; details regarding methodology in collection, transportation and preservation.

Fungal Diseases

- Names, general morphological features, and paediatric diseases produced by fungi commonly found in Pakistan, including dermatophytes, maduromycosis and opportunistic infections.

Important Parasites;

- Names and modes of infection of parasitic paediatric diseases commonly found in Pakistan including amoebiasis, malaria, leishmaniasis, ascariasis, cestodiasis, ankylostomiasis, giardiasis, hydatid disease and guinea worm disease.
- Important viruses
- Sterilization and disinfection
- Immunization
- Nosocomial infections
- Use of investigation and procedures in laboratory
- Sputum, urine, stool, cerebrospinal fluid (CSF), pus, aspirates etc.

MD Developmental Paediatrics

Basic Principles of Paediatric Medicine

Definition, epidemiology, etiopathogenesis, presentation, complications, differential diagnosis and treatment of the following organ system disorders.

1. General, Community, Preventive & Social Pediatrics And Nutrition

- Orientation/state of child health
- Primary Health Care
- Community Diagnosis (Types & Questionnaire Development)
- Role of Environment & Social Factors in Child Health
- Safe Motherhood
- Immunization (EPI & Surveillance)
- Malnutrition (Assessment & Rehabilitation)
- Nutritional Surveillance
- Role of Vitamin A in Child Health
- Role of Zinc in MCH
- Baby Friendly Hospital
- Save the Newborn Initiative
- Breast Feeding & Lactation Management
- Infant Nutrition
- Communicable Diseases in Paediatrics
- Maternal & Neonatal Tetanus
- Polio Eradication
- Millennium Development Goals
- H1V/AIDS & Child Health
- Child Labor
- National health programs related to child health
- National health nutrition programs
- Prevention of blindness
- School health programs\
- National policy on children, adolescence, adoption, child labor, juvenile delinquency etc.
- Government and non-government support services for children
- Investigation of adverse events following immunization in the community
- General principles of prevention and control of infections including food borne, waterborne, soil borne and vector borne diseases
- Investigation of an outbreak in a community

2. Neonatology

- Scope of Neonatology (definitions, neonatal, perinatal periods, live birth, still birth, abortion, legal viability, infant mortality, neonatal and perinatal mortality, morbidity, long term handicaps).
- Organization of neonatal services, primary, secondary and tertiary level care, system of referral.
- Reviewing role of obstetricians, LHV's, TBA's, Nurses, concept of coordinated team work during perinatal period.
- Obstetric history and birth history including antenatal, natal and postnatal periods, maternal illnesses in relation to neonatal problems.
- Routine history, examination of newborn (wt. Length, head circumference, normal newborn examination, congenital anomalies, birth injuries, detailed examination along with checklist, neonatal reflexes).
- Detailed categorization of newborns (term, pre-term, post-term, gestational assessment, AGA, SGA, LGA, IUGR), scoring system, IU growth charts).
- Neonatal Hypothermia (pathophysiology, prevention and management techniques).
- Organization of neonatal unit including neonatal equipment, appropriate adaptation at village, tehsil and district level).
- Feeding of newborns (breast feeding, formula feeding, techniques, types of formulas, lactation failure, parenteral nutrition).
- Birth anomalies (skeletal, visceral, systemic), associations, syndromes).
- Neonatal infections [septicemia, early onset, late onset, congenital TORCH, nosocomial patterns, prevention, investigations, treatment, sequelae, neonatal meningitis, localized infections (umbilicus, eye, skin, diarrhea)
- Neonatal Jaundice-etiology, type, diagnosis, management, prognosis.

- Respiratory distress - common causes, manifestations, management, referral.
- Cyanosis in newborn, recognition, differential diagnosis management, referral.
- Seizures in the newborn, types, etiology, management, outcome, neonatal tetanus.
- Metabolic problems: hypoglycemia, hypocalcemia, other metabolic derangements, management.
- Anemia in the newborn, causes, management
- Hemorrhagic disease of newborn, other bleeding disorders
- Neonatal surgical diseases (necrotizing enterocolitis, gut obstruction,
- esophageal atresia & TE fistula, diaphragmatic hernia, imperforate anus).

3. Infectious Diseases

- Malaria
- Enteric Fever
- EPI Diseases (Polio, AFP, pertussis, diphtheria, tetanus, hepatitis)
- Child with Rash
- Worm Infestations
- PUO
- Tuberculosis
- Shigellosis
- Cholera
- Chicken Pox
- Mumps
- Antibiotic therapy

1. Hematology & Oncology

- Clinical Approach to Anemia

- Iron deficiency anemia
- Thalassemia
- G6PD deficiency / hemolytic anemias
- Aplastic anemia
- Thrombocytopenic purpura
- Clinical approach to bleeding child
- Hemophilia & Von-Wiilebrand Disease
- Acute lymphoblastic leukemia
- Lymphoma / Hodgkin's Lymphoma
- Wilm's Tumor / Neuroblastoma

2. Respiratory Diseases

- Pneumonia
- Bronchiolitis
- Bronchial Asthma
- Pleural Effusion / Empyema
- Pulmonary Tuberculosis
- Pneumothorax
- Croup
- Foreign body inhalation
- Otitis media

3. Gastroenterology & Hepatology

- Hepatitis A,B, C, D, E.
- Hepatic Encephalopathy
- Clinical approach to bleeding from upper/ lower GIT
- Acute Diarrhea & complications
- Chronic / persistent Diarrhea
- Malabsorption/Celiac Disease
- Recurrent abdominal pain
- Wilson's Disease
- Constipation
- Gastroesophageal reflux
- Acid peptic disease

4. Nephrology

- Urinary Tract Infection
- Hematuria / Proteinuria: Clinical approach
- Acute Glomerulonephritis
- Posterior urethral valves
- Obstructive Uropathy
- Urolithiasis

5. Cardiovascular Diseases

- Heart Failure
- Cyanotic Congenital Heart Disease (TOF)
- Acyanotic congenital heart diseases (VSD, PDA, ASD)
- Rheumatic Fever
- Hypertension
- Viral myocarditis

6. Endocrine Diseases

- Short Stature
- Hypothyroidism
- Congenital Adrenal Hyperplasia
- Ambiguous Genitalia
- Diabetes Mellitus
- Hypoparathyroidism
- Addison's Disease
- Obesity & Cushing Syndrome

7. Rheumatic & Orthopedic Diseases

- Limping Child
- Juvenile Rheumatoid Arthritis
- Systemic Lupus Erythromatosis
- Henoch Schonlein Purpura

8. Toxicology

- General Principles of Management
- Kerosene oil poisoning
- Snake bite
- Insecticide poisoning
- Corrosive poisoning
- Opioid poisoning

9. Child Abuse

- Child Rights
- Child Abuse
- Child Labor

10. Pediatric Surgery

- Cleft Palate/Lip
- Acute Abdomen (appendicitis, intestinal obstruction, atresia, malrotation)
- Esophageal atresia & TE fistula
- Hirschprung Disease
- Inguinal hernia/hydrocele
- Undescended testis
- Club Foot
- Imperforate anus
- Congenital hypertrophic pyloric stenosis
- Diaphragmatic hernia
- Rectal polyp, prolapse, anal fissure
- Congenital dislocation of hips
- Circumcision

11. Dermatology

- Common skin infections (scabies, impetigo)
- Eczema (including Atopic)

- Common fungal infections

12. Miscellaneous

- Immunodeficiency
- Anaphylaxis & Allergies

13. Paediatric Emergency and Critical Care

- Shock
- Cardio-respiratory arrest
- Respiratory failure
- Congestive cardiac failure
- Acute UTI
- Acute renal failure
- Febrile child
- Status epilepticus
- Head injury
- Spinal injury
- Burns
- Diabetic ketoacidosis
- Fluid and electrolyte disturbances and its therapy
- Acid-base disturbances
- Sepsis
- Poisoning
- Drowning
- Accidents and major trauma
- Scorpion and snake bites

Skills & Procedures

By the end of subspecialty training, trainees will:

- Understand the appropriate relevant anatomical markers, indications, contraindications and complications of procedures commonly used in the Developmental Paediatrics.
- Understand local and national guidelines for obtaining informed consent
- Understand local guidelines for providing sedation and pain relief
- Understand and practice scrupulous aseptic techniques
- Be able to interpret results and undertake a management plan accordingly
- Be able to record results and document procedures legibly and accurately
- Understand age-appropriate normal ranges of tests commonly requested in the Department setting
- Understand the positive and negative predictive value of commonly performed tests
- Be able to explain investigation results to caregivers and/or the patient
- Be able to enlist the help of play therapists and nursing staff in order to attempt to reduce the anxiety of a child and caregivers

- **History and Examination.**

  - History taking including psychosocial history
  - Physical examination including fundus examination
  - Newborn examination
  - Gestation assessment
  - Thermal protection of young infants
  - Nutritional anthropometry and its assessment
  - Assessment of growth, use of growth chart
  - SMR rating
  - Developmental evaluation
  - Communication with children, parents, health functionaries and social support groups
  - Genetic counseling.

- **Monitoring Skills:**

  - Temperature recording
  - Capillary blood sampling
  - Peripheral Arterial blood sampling
  - Pulse oximetry
  - Measurement of peak flow

- **Therapeutic Skills:**

    - Hydrotherapy
    - Nasogastric feeding
    - Endotracheal intubation
    - Cardiopulmonary resuscitation (pediatric and neonatal)
    - Administration of oxygen
    - Venepuncture and establishment of vascular access
    - Collection of blood from central lines
    - Umbilical venous cannulation and sampling
    - Administration of fluids, blood, blood components
    - Parenteral nutrition
    - Intraosseous fluid administration
    - Intrathecal administration of drugs
    - Common dressings
    - Abscess drainage
    - Basic principles of rehabilitation.

- **Acute Life Support/Resuscitation procedures**

    - Manual airway clearance manoeuvres
    - Airway insertion
    - Orotracheal and nasotracheal intubation
    - Use of continuous positive airways pressure
    - Needle thoracentesis
    - Tube thoracotomy
    - Direct current electrical cardioversion defibrillation
    - External cardiac pacing
    - Pericardiocentesis

- **Investigative Skills:**

    - Lumbar puncture
    - Ventricular tap
    - Pleural, peritoneal, pericardial and subdural tap
    - Collection of urine for culture
    - Urethral catheterization

- Supra-pubic aspiration.

- **Gastrointestinal Procedures**

  - Oro/nasogastric tube replacement
  - Gastrostomy tube replacement
  - Gastric lavage

- **Neurological Procedures**

  - Lumbar puncture
  - Ventriculoperitoneal shunt tap (VP)

- **Pain Relief and Sedation**

  - Pain scoring
  - Non-pharmacologic measures
  - Pharmacologic approaches
  - Local anaesthetics
  - Regional nerve blocks
  - Procedural sedation techniques

- **Bedside Investigations:**

  - Hemoglobin
  - TLC
  - ESR
  - Peripheral smear staining and examination
  - Urine: routine and microscopic examination
  - Stool microscopy including hanging drop preparation
  - Examination of CSF and other body fluids
  - Gram stain, ZN stain
  - Shake test on gastric aspirate.

- **Bedside Interpretation:**

  - X-rays of chest, abdomen, bone and head

- ECG
- ABG findings
- CT scan.
- Common EEG patterns
- Audiograms
- Ultrasonographic abnormalities and isotope studies.

MD Developmental Paediatrics

Specialized Training in Developmental Paediatrics

Research

Research Component will be undertaken in 3rd year and will be examined via thesis in the final year exam.

1. Research Process

This includes the learning of skills of critically assessing the published articles in medical journals based on the knowledge acquired earlier. Applying the knowledge of epidemiology and biostatistics, population dynamics, qualitative research methods, computer skills and clinical skills, the student will learn the development of a research question, giving essential background, making statements for objectives, data collection, analysis applying statistical methods using the computer skills and present their readings and research projects for the third session.

Objectives

The objectives of this section of Module I is to enable the students to:

1. Create a critical mass of trained persons well-oriented in writing a research proposal for the dissertations and funding purposes.

2. Critically comprehend the concepts and at the same time apply the epidemiological and statistical methods to develop a research protocol making use of computer statistical soft wares and information technology.

Potential Learning Experiences

1. The critical analysis of the published scientific paper will be used as baseline to start with the concept of writing a proposal to enable the students to identify the scientific requirements of medical writing and the various components of the paper.
2. This will be critical reading of a published paper in context with the background, objectives, aims, study designs, data collection tool and

their validity, data presentation and interpretation, in terms of discussion and conclusions. Statistical methods will be assessed for their applications and validity. The citation and listing of references will also be examined using the guidelines for critical assessment of scientific papers.

3. Through definitions of objectives and hypothesis, the identification of variables and their types will be worked at.
4. Sampling techniques employed will be qualified appropriate to the objectives and the study designs. Probability and non-probability techniques will be applied on different scenario to appropriate their use in research.
5. Sample size estimation based on objectives and study designs will be done using various statistical applications.
6. Construction of Proforma and questionnaire appropriate to the study objectives and variables.
    - Validity of the measurements will be discussed for the documented variables.
    - Importance of self- and interviewer administered questionnaire.
    - Pre-testing the methodology of data collection
7. Writing the title of the study topic to include the study design, variables and statistical analysis.
8. Abstract writing will be done according to different standards.
9. Presentation of the project will be the final step

Contents:

Following are the contents of the course:

1. Principles of critical reading of a scientific paper
2. Definition of research
3. Importance of research in public health
4. Selection of topic for research
5. Literature Search using internet and library
6. Preparing the background for the proposal writing.
7. Study design, sampling techniques, inclusion and exclusion criteria.
8. Methodology
9. Choosing the statistical techniques.
10. Reference writing
11. Abstract writing

3. Basic Biostatistics

This discipline plays a fundamental role in the interpretation of findings obtained as a result of the studies conducted, data collected and analysed using statistical applications which appropriately draw inferences on the collected data.

Objectives

The objectives of this section of Module I is to enable the students to:

1. Define variables and their types:
    - What are variables, different type of variables, classify variables into qualitative, quantitative, discrete and continuous variables
    - Define dependent and independent variables

- Breakdown the range of a series of quantitative measurements into intervals and specify which measurement belongs to which intervals.

2. Define the data types and the scales of measurements
- Continuous and discrete data sets
- Ordinal and nominal data sets
- Interval scales
- Composite scales

3. Interpret a given data: Apply descriptive statistics for continuous variables in terms of:
- Measures of central tendency: Calculate the mean, median and mode and interpret them.
- Measures of dispersion: variance, standard deviation, coefficient of variation
- Measures of shapes: regarding the distribution of the data sets

4. Apply frequency distribution to a given data and its interpretation. What are percentiles, their uses and limitations in a dataset

5. Define Probability, types of probability with examples.

6. Calculate and interpret confidence intervals for a parameter. Explain why it is necessary to calculate confidence interval in a data

7. Apply concepts of comparing data (Inferential statistics):
- Learn about the basics of hypothesis development
- What is a Null hypothesis and Alternate Hypothesis
- Describe the rationale of a significance test
- Define Alpha and Beta errors

- Calculate the Power of a study

8. Apply various tests of significance: their rationale and use.

9. Explain the meaning of 'p' in statistical terms and its interpretation.

10. Apply the steps of Hypothesis testing

- Choosing an appropriate test of significance
- Use the tests of significance for parametric data: for a single mean, for two means of unpaired observations, two means of paired observations, three or more independent means (ANOVA).
- Use the tests of significance for categorical data: for one proportion, two independent proportions, two paired proportions, several proportions, analyzing frequency tables (2x2, 2xk tables), large tables with ordered categories.

11. Investigate the association between two continuous variables: using a scatter diagram to:

- Identify dependent and independent variables
- Apply correlation–calculate correlation coefficients,
- interpretation and presentation of correlation.

12. Investigate the relationship of two continuous variables using regression, calculating linear regression of y on x and draw line of regression, interpreting and presenting regression.

- When to choose –regression or correlation?

Contents:

The following are the contents of the course:

1. Introduction to Biostatistics

2. Types of statistical applications

3. Variables

4. Scales of measurements

5. Descriptive Statistics

6. Probability Distributions: Normal, Poisson, Binomial

7. Concepts of analytical statistics: Hypothesis testing:

8. Tests of Significance: Normal test, t test, Chi square test etc.

9. Correlation

10. Regression

11. Sampling and various sampling techniques

12. Data presentation: Figures, graphs, tables

Knowledge of Child Development

1. Domains of Development

Objectives

The objectives of this section of are to enable the student to:

1. Describe the major theories of cognitive, language, moral, social, and emotional development in children and the clinical applicability of these theories.
2. Describe the stages and the sequence of development in cognitive, motor, language, self-help, and social/emotional abilities from infancy through adolescence.
3. Recognize how different developmental domains (e.g., cognitive, social/emotional) interact and influence one another at different stages of development.

4. Identify the range of individual variation in normal development seen among typically developing children and adolescents at any given age in clinical settings.

Potential Learning Experiences

1. Residents should be expected to review development in each domain with families (and preceptors) and to discuss expected advances in each domain before the next scheduled visit.
2. Develop a library of selected videotapes. Over the course of training, have residents review tapes independently and keep an ongoing record of those viewed.
3. Longitudinal case study: At the beginning of residency, pair each resident up with a family of a newborn to follow over time. At selected intervals, residents will visit families in their homes to interact with, observe, and assess the child's developmental progress. Visits should be reviewed with a preceptor and approximately once or twice a year have small groups of residents get together with a preceptor for a tutorial in which each resident will discuss heir child and the family's current adaptation.
4. Videotape children at all developmental levels during well child visits. As part of the primary care clinic teaching curriculum, view tapes of children of different ages and discuss each child's development and the approach to anticipatory guidance that was (or could be) used for each case viewed.

5. Observe parent–child interactions in the natural environment, e.g., zoo, museum, grocery store, mall, restaurant. Identify disciplinary practices, nurturing behaviors, and displays of developmental skills of the child. Estimate the age of the child on the basis of displayed skills.
6. At the beginning of each rotation, have residents explore their own developmental history (when possible by talking with parents or other family members) in terms of the timing of different developmental achievements (e.g., when they slept through the night, said their first words, took their first steps, learned to read, rode a two-wheeled bicycle, etc.). Make a time line chart to post on a wall for each resident to include his/her developmental milestones. Use the chart during each rotation as the basis for a discussion of individual variation in normal development.
7. Have a resident accompany a faculty member into a clinical encounter in which the age and developmental status of the child is not known to the resident. The resident's task could be to simply observe the child and glean

as much information as possible for later discussion with the faculty member. Asking the resident to estimate the child's age from these observations, and marshalling evidence for the estimate, usually catches the resident's attention and provides a basis for planning additional observations.

2. Processes and Mechanisms of Development

Objectives

The objectives of this section of module II is to enable the students to:

1. Develop a working knowledge of the role of early attachment relationships in promoting and/or discouraging optimal developmental adaptation and later interpersonal relationships.
2. Describe the role of temperament, individual differences, and "goodness of fit" in influencing development and interaction with others.
3. Recognize, assess, and include in management plans factors that predispose the child to developmental risk and those that best predict to resilience in development.
4. Varify and clinically manage the potentially vulnerable child.
5. Use information related to the processes and mechanisms of development in anticipatory guidance and problem management.

Potential Learning Experiences

1. Have residents evaluate themselves using a standard temperament rating instrument. Discuss how their own temperaments were reacted to by others during childhood and how these interactions influenced their overall development.
2. Have residents evaluate the temperamental characteristics of a child and his/her parents who present with discipline and/or noncompliance issues. Identify clinical examples of how parent and child temperaments interact to create problems, such as an "anxious" mother with a "fussy" baby. Discuss goodness-of-fit and suggestions for management with the family.
3. Have a tutorial session on how different patterns of attachment present in clinical settings during infancy. Include discussion of the developmental sequelae of each pattern and how to use information from observations of attachment clinically in primary care. Follow up by having residents observe parent–infant interactions during patient visits in primary care clinic, and discuss the observations with families.

4. In a day-care center for infants and toddlers, have residents observe interactions between parents and children when the children are picked up at the end of the day.
- Discuss how the same families might look in the pediatric office and how the pediatrician might use such observations in anticipatory guidance with the family.

5. Encourage residents, when possible, to follow in one or two families with infants who had some medical complication shortly after birth (e.g., febrile neonate, brief NICU stay), which resolved, to watch for and ameliorate the development of vulnerability.

Communication Skills

Objectives

The objectives is to enable the students to:

1. Demonstrate the ability to obtain information from children, adolescents, and families in a manner that is:
   - Culturally sensitive.
   - Developmentally appropriate.
   - Family focused.
2. Demonstrate skill in using appropriate interview techniques to gather information, such as:
   - Use of open-ended and direct questions.
   - Monitor nonverbal communication, both of the patient and family members and of themselves.
   - Observing child behaviors.
   - Providing and receiving feedback from patient and family.
3. Demonstrate skill in communicating with children, adolescents, and families in problem situations, such as dealing with difficult parents, giving bad news, and discussing sensitive issues.
4. Demonstrate the ability to share information clearly and concisely with professional colleagues in many venues, including during clinical situations, on rounds in formal presentations, on the telephone, and in writing. In all these forms, demonstrate sensitivity to patients and families, including respect for confidentiality.

Potential Learning Experiences

1. In a small group setting, have residents recall and discuss their own experiences with giving bad news to families with a preceptor who helps focus the group on aspects that went well and opportunities for improvement. This could include setting the scene with appropriate supports for families and providers, expressing empathy, when and how to include children, deciding how much information to convey at one time, and providing follow-up.
2. Have residents conduct, with preceptor supervision, a group meeting with parents, children, and adolescents to discuss what they want to see, hear, and do during a visit to their doctor.

3. Review dictated or written reports, summaries, and letters to parents, teachers, and physicians. Use examples of their own work or that of their colleagues and faculty to demonstrate effective written communication.
4. Provide opportunities for residents to observe faculty modeling appropriate communication skills such as providing bad news or dealing with stressed parents, including difficult interview situations. The faculty's ability to acknowledge their own challenges, dilemmas, and mistakes in communication with patients encourages the resident trainee to focus fully on this important area.
5. Develop a collaborative office rounds program for residents. This consists of pediatricians and mental health professionals discussing challenging children with psychosocial issues.

Assessment Skills

1. Developmental Surveillance and Screening from Infancy Through Adolescence

Objectives:

The objectives of this section are to enable the student to:

1. Demonstrate an understanding of the process of developmental surveillance, which emphasizes monitoring development over time and in the context of the child's overall well-being using historical information, parental concerns, clinical observation, hands-on examination, and family/environmental information.
2. Enlist the purposes for developmental, and psychosocial screening of children in clinics.
3. Complete a thorough history using a proforma through parent interview and review of medical records to make a risk determination regarding developmental concerns.
4. Appraise developmental status of a child at any age by observation, physical examination, and neurodevelopmental assessment.
5. Apply screening protocol to older children and adolescents for high risk behaviors such as drug and alcohol use, unprotected sexual activity, running away, and driving safety as part of routine well-adolescent visits.

6. Demonstrate a working knowledge of the range of instruments and techniques including interviews, standard physician check-sheets, parent-completed forms, naturalistic observation, and direct testing appropriate for screening children and families in health care settings.
7. Apply preselected tools for using a biopsychosocial model to the evaluation of developmental and behavioral concerns.
A resident should:
- be able to correctly administer and interpret at least one formal developmental screening method. This includes using screening results to give feedback to parents and to guide referral decisions.
- Be able to use global behavioral rating scales (including both parent and teacher scales) and interview data to identify behavioral problems in need of mental health intervention and/or referral.

Potential Learning Experiences

1. Have residents use assessment techniques with children of a variety of ages in different settings.
2. Incorporate developmental screening methods into routine guidelines for well-child care.
3. Seminar sessions during block rotation could include the observation of child behavior and parent-child interactions via videotapes, role-playing exercises, or simulated patients, with integration of observation skills expected in patient care activities.
4. Comfortable in using PEEP, CRS, SGS II and CARS etc

2. Diagnostic Classification Schemas

The objectives of this section of are to enable the students to:

1. Apply International Classification of Diseases- 10 diagnoses to children with developmental disabilities.
2. Become familiar with DSM-IV and its multi-axial system as it applies to children with diagnosed mental disorders.

Potential Learning Experiences

1. Incorporate application of DSM-IV diagnoses into case conferences. Give three to four residents the manuals during case presentations as designated

"coders" who can then present diagnoses at the end of case discussions. The group can come to a consensus (by vote) as to the best codes for the child and for situations.

3. Evaluations by Other Professionals:

The objectives of this section of are to enable the students to:

1. Determine the need for assessment by other professionals. Specific discipline competencies include:
   - Child Psychiatry.
   - Physical Medicine.
   - Neurology.
   - Educational specialties.
   - Psychology.
   - Social work.
   - Speech pathology.
   - Audiology.
2. Formulate effective referral questions to appropriate professionals.
3. Interpret the results of evaluations by other professionals.
4. Use information from other professionals to guide decisions for additional evaluations and interventions.
5. Recognize the use of evaluations by other disciplines in the eligibility determination for early intervention and special education services.

Potential Learning Experiences

1. Observe psychological evaluations, including observations of the administration and interpretation of psychometric procedures.
2. Provide opportunity for residents to have hands-on exposure to materials and methods used by other professionals (e.g., IQ tests).
3. Encourage residents to obtain evaluation reports on their clinic patients and review results with a preceptor or professional from the same discipline (e.g., psychologist).
4. Sit in on occupational/physical therapy evaluation, preferably with the resident's own patient.
5. Make a school visit to a patient, e.g., a child for whom the resident is considering prescribing stimulant medication, and discuss educational programming with the school psychologist and the child's teacher.

Spectrum of Child Development

Objectives

The objectives in this section are to enable the students to:

1. Comprehend normal developmental influences on the specific topic.
2. Describe common variations of the topic area.
3. Describe common family, environmental, and cultural factors associated with the topic.
4. Counsel parents regarding the prevention of problems and the management of variations using common intervention strategies.

1. Introduction/Orientation to the Spectrum Concept:

- Conditions and findings in development follow a spectrum that ranges from normal, to variants of normal, to clear deviations from normal. The presentation of symptoms and findings follows in a similar fashion. A child's presenting symptoms may be assessed as normal or a normal variant, as a variant that presents a problem for the child and/or family, or as a clear problem of sufficient magnitude or intensity to be considered a disorder. This concept of developmental symptoms and conditions occurring across a spectrum is important because it shapes a hierarchy of responses to these symptoms.
- The first level of response is to those concerns or findings that are assessed as normal development and behavior. Such concerns are often brought to the physician for assessment and appropriate management. In this case, appropriate management usually consists of education and reassurance of the parent. Often there may be a need for guidance regarding the handling of the situation to prevent the condition from worsening or to promote a decrease in symptoms. Incorporating professional advice into health care before the onset of symptoms is known as anticipatory guidance, and this guidance is a cornerstone of health promotion.
- The second level of response is toward those concerns that are assessed to be problems. At this level, the symptoms have some

adverse impact on the child and/or family and require some degree of intervention. Such intervention may include consultation with other professionals, but it will most often rest with the primary care physician. Interventions might include specific management suggestions, counseling the family on possible approaches to the problem, or recommending other resources to help the family address their concerns. The third level of response is toward those concerns that are determined to be severe enough to be labeled disorders.

- Symptoms at this level are severe enough to meet the specific criteria for a disorder, such as are outlined in the DSM IV.
- The section on health promotion pertains to providing anticipatory guidance regarding a number of topics. Effective anticipatory guidance is based on the application of general principles and knowledge of child development as well as on the recognition of the infinite normal variations seen among children and families.

2. Developmental and Behavioral Symptoms and Disorders

- **Developmental Disabilities**

Objectives

The objectives of this section are to enable the students to:

1. Generate a differential diagnosis for the child with persistent global developmental delays.
2. Generate a differential diagnosis for the child with persistent motor delays, such as cerebral palsy, developmental coordination disorder, and other neurodevelopmental and general medical conditions.

3. Generate a differential diagnosis for the child with abnormalities in speech and language development, such as language disorders, stuttering, and other medical conditions.
4. Generate a differential diagnosis for the child with 'persistent learning difficulties, such as specific learning disabilities, other general medical conditions, and other mental disorders.
5. Coordinate an evaluation of a child with persistent developmental symptoms, after having generated a differential diagnosis.
6. Know the role of early intervention programs in the evaluation and treatment of children with developmental delays or those who are at risk for such delays.

7. Recognise the effects that developmental disabilities can have on the child and family functioning and how to assist with them.
8. Comprehend/Diagnose the common medical complications associated with cerebral palsy, moderate to severe mental retardation, Down syndrome, and myelomeningocele.
9. treat acute medical conditions in the all disabilities.
10. Develop effective therapies available for patients with cerebral palsy, mental retardation, genetic disorders, and myelomeningocele
11. Coordinate comprehensive care for patients with cerebral palsy, various degrees of mental retardation, genetic disorders, and myelomeningocele.

Potential Learning Experiences

1. Attend specialty clinics in which children with developmental problems are evaluated, following a child/family through a full evaluation and feedback session with the family when possible.
2. Additional clinical settings include specialties such as neurology, genetics, psychology, and neonatal follow up programs.
3. Observe or participate in the evaluation of children with delays.
4. For a patient presenting with questionable learning or attention problems, have residents contact teachers and work with the school to develop a plan for assessment and follow-up.

- **Impulsive/Hyperactive or Inattentive Behavior**

Objectives

The objectives of this section of are to enable the students to:

1. Generate a comprehensive differential diagnosis to assess the concerns of parents regarding their child's disruptive, overactive, impulsive, and/or inattentive behaviors.
2. Describe the natural history of ADHD and how its presentation varies with developmental progression.
3. List and recognize the common mental health and learning comorbid conditions that can present with symptoms suggesting ADHD.

4. Use history, physical examination, child observations, parent and teacher questionnaires, and child and family interviews in evaluating symptoms of impulsivity, hyperactivity, and inattention.
5. Appropriately use additional disciplines in the evaluation and treatment of symptoms of impulsivity, hyperactivity, and inattention.
6. Assist families in initiating behavioral, cognitive, academic, and pharmacological interventions in children with ADHD behaviors

Potential Learning Experiences

1. Direct an evaluation of a patient presenting with complaints of impulsivity, inattention, and/or hyperactivity.
Monitor their progress over several visits by covering the diagnostic process and management of the problem symptoms.
2. In programs with multidisciplinary assessment teams, involve the resident in taking the initial history and physical/neurological examinations, and enlist the resident as a companion to the child through psychoeducational and other formal testing.
3. Role-play a diagnostic family interview in which the chief complaint is "ADHD."
4. Use a tutorial session to review a variety of child, parent, and teacher questionnaires and assess their uses, strengths, and weaknesses.

- **Negative/Antisocial Behavior**

Objectives

The objectives of this section are to enable the students to:

1. Generate a differential diagnosis for patients presenting with:
   - Negative emotional behaviors.
   - Aggressive oppositional behaviors.
   - Secretive/antisocial behaviors.
2. Discuss the physiological (e.g., temperament) and environmental (e.g., maternal depression, family antisocial behavior) antecedents of negative/antisocial behavior patterns.
3. Devise an evaluation and intervention strategy for a child exhibiting negative/antisocial behavior.

4. Counsel families of children having milder forms (developmental variations and problems level conditions) of negative/ antisocial behavior, and monitor the effectiveness of interventions over time.
5. Determine when a child with negative/antisocial behaviors needs to be referred to appropriate professionals and community resources, and continue to participate in that child's ongoing primary care.

Potential Learning Experiences

1. Attend and participate in multidisciplinary clinics as available (e.g., behavior problems clinic, child psychiatry clinic). Some ways residents could be actively involved in such clinics include:
   - Performing initial or follow-up parent interviews.
   - Completing structured child observation/interaction session while parents are being interviewed.
   - Developing assessment reports and management plans.
2. Participate in educational or support groups for parents of children with disruptive behavior problems. This could be done monthly as part of a primary care clinic.
3. Perform a role play of parents with children having negative/ antisocial behaviors. Be sure to include children of all ages (toddlers through adolescents).

- **Feeding/Eating Problems**

Objectives

The objectives of this section of are to enable the students to:

1. Recognize symptoms of feeding disorders in young children, such as failure to thrive, food refusal, and oral motor difficulties.
2. Recognize symptoms of problem eating habits such as fasting, binge eating, purging, excess snacking, excessive dieting, and excessive exercise.
3. Elicit problem symptoms such as inappropriate body image, nutritional beliefs, sense of loss of control of eating behavior, and misuse of diuretics and laxatives.
4. name the psychosocial factors possibly contributing to problem habits of under eating and overeating, including peer and media influence and family situations.

5. Collaborate with other providers to develop individualized management plans for patients with anorexia nervosa, bulimia nervosa, binge eating disorder, or eating disorder not otherwise specified.

Potential Learning Experiences

1. Participate in a feeding problem or eating disorders program in which identified patients are being treated.
2. In primary care settings, identify, counsel, and follow a child with obesity and his family.
3. Develop case vignettes about patients with eating disorders for residents to review and discuss with faculty supervision.

- **Elimination Problems**

Objectives

The objectives of this section are to enable the students to:

1. Define encopresis and enuresis.
2. generate a comprehensive differential diagnosis for encopresis and enuresis.
3. evaluate concerns regarding elimination behaviors using interview, physical examination, and indicated diagnostic studies.
4. initiate treatment for problem elimination behaviors using counseling, behavioral management, and appropriate medical intervention.
5. counsel families regarding the management of nocturnal enuresis, including the use of alarms and medications.
6. counsel families regarding the management of encopresis, including initial bowel evacuation and ongoing bowel regimens.
7. Recognize when elimination problems may warrant referral for subspecialty evaluation or management (e.g., urology, gastroenterology, psychiatry).

Potential Learning Experiences

1. In primary care settings, the resident should identify, assess, counsel, and follow patients with elimination problems.
2. Develop a set of case vignettes of various elimination issues presenting in primary care for discussion.

- **Illness-Related Adaptations**

Objectives

The objectives of this section are to enable the students to:

1. Counsel families regarding the developmental progression of how children typically think about illness and health and how to improve their understanding to better cope with illness.
2. Counsel families regarding the impact of acute illnesses, physical disabilities, sensory impairments, and hospitalizations on child behavior and development.
3. Counsel families regarding the impact of chronic illness and terminal conditions on development and behavior from toddlerhood through adolescence.
4. Calculate the impact of a chronically ill child on family relationships and the available mechanisms of support.
5. Recognize the importance of, and use strategies for, minimizing pain and suffering during and after medical procedures and in chronic conditions, using behavioral and pharmacological techniques.
6. Utilize the understanding of the child's developmental level to provide anticipatory guidance, and discuss the management of acute and chronic illness with patients and families.

Potential Learning Experiences

1. Arrange for residents to spend time in child-life departments (play rooms) and with child-life staff followed by guided discussion of how specific patients are coping with hospitalization and illness.
2. Attend chronic illness support group meetings for children, siblings, or parents.
3. During the developmental rotation, have residents interview two or three children at different developmental levels (e.g., preschoolers, 6 to 8 year olds, 10 to 12 year olds, and adolescents) about their understanding of health and illness. Interviews can be conducted with friends or relatives, in the clinics or on the inpatient wards. Interviews are then discussed with

emphasis on the developmental progression of health understanding in children.

- **Atypical Behaviors/Disordered Relationship Skills**

Objectives

The objectives of this section are to enable the students to:

1. Demonstrate a working knowledge of, and be able to manage effectively, repetitive behavior problems and disorders, such as head-banging and other self-injurious behaviors, trichotillomania, transient tic disorders, and Tourette syndrome.
2. Describe the clinical manifestations of problems involving social interaction behaviors including pervasive developmental disorders (PDD) and Autistic Spectrum Disorders (ASD).
3. Distinguish pervasive developmental disorders from other childhood disorders.
4. Develop a complete differential diagnosis for PDD.
5. Determine whether a child with social interaction difficulties needs referral for further evaluation for PDD.
6. Familiarize with appropriate long-term management techniques and necessary components of an effective educational and/or habilitation program for children and youth with PDDs.
7. Recognize bizarre behaviors in children (e.g., delirium, psychotic behaviors, agitation, disorientation, memory impairments); determine whether they are caused by a medical condition, substance abuse, or mental disorder; and intervene accordingly.

Potential Learning Experiences

1. Evaluate preschool children previously identified with autistic-like behaviors to identify their medical needs; assist in determination of a definitive diagnosis, if possible; identify other assessments required; and provide input into their individualized program plans.
2. Attend child psychiatry settings, developmental diagnostic programs, and child psychology services in which children are being assessed and/or treated for PDD.
3. Visit a school-based program that includes children with PDD. When possible, have residents arrange to visit one of their own patients in school while doing the block rotation.

Environmental Influences on Development

1. Crisis and Change in the Family

Objectives

The objectives of this section are to enable the students to:

1. Recognize that family transitions are commonly accompanied by physical and behavioral symptoms in the child and in other family members.

2. Consider the following types of family crisis and change and of accompanying challenges to adaptation by the child:

- Parental discord and divorce.
- Remarriage.
- Family illness, including acute, chronic, and terminal conditions.
- Death and bereavement.
- Family violence.
- Family mobility.

3. Utilize inquiries regularly regarding past or impending family change and family stress during health maintenance visits and in all assessments of developmental and behavioral concerns.

4. Demonstrate the ability to identify children who are at developmental risk as a result of family crisis and change to facilitate assessment and referral.

Potential Learning Experiences

1. Observe faculty assessing and managing such family issues.

2. Role-play interview scenarios in which child symptoms arise in the context of family change.

2. Diversity in Family Constellations

Objectives

The objectives of this section are to enable the students to:

1. Demonstrate how diversity in family structure can influence child development, behavior, and health.

2. Define the major strengths and risks to children living in each of the following types of family constellations: heterosexual family, single parent,

blended family, adolescent parent(s), intergenerational family, adoptive family.
3. Provide anticipatory guidance appropriate to differing family constellations, as well as support around specific family life problems as needed, to both parents and children.
4. Be aware of community services and resources that provide support for children and parents in nontraditional families.

Potential Learning Experiences
1. Management of a panel of patients in a primary care setting that includes families reflecting some of the constellations listed above in Objective
2. Longitudinal attendance in one community support group for single, adolescent, adoptive, or foster parents.
3. Arrange for a panel of grandparents who are raising their grandchildren to talk to residents as a group (perhaps as a noon conference).

3. Diversity in Culture and Community

Objectives
The objectives of this section are to enable the students to:
1. Demonstrate understanding of and sensitivity toward the values, perspectives, and special needs connected with the differing racial, cultural, religious, or educational status of patients and families.
2. Demonstrate an attitude of respect for the value of diversity, i.e., an attitude that acknowledges the contributions, the interdependence, and the belonging of all cultural groups within our society.
3. Demonstrate knowledge regarding cultural beliefs and biases and an ability to extend to families concrete permission to discuss their own culturally based experiences and values—i.e., invite families to educate the physician.
4. Recognize cultural differences in how families understand illness, especially how sick children are expected to behave and how families are expected to respond. Demonstrate an ability to adjust clinical inquiries and interventions to these culture-specific expectations.

5. Demonstrate an ability to communicate successfully with culturally diverse patients and families.
6. Demonstrate a general understanding of differing patient needs on the basis of differences in defined geographic communities, i.e., rural, suburban, and urban.

Potential Learning Experiences

1. Require residents, as a routine, to identify the relevant racial, cultural, religious, and educational backgrounds of the patient during case presentations.
2. Hold group discussions intended to share culturally distinct information about child rearing, family life, social acceptance and discrimination, and viewpoints regarding illness and disability. Such groups may be specifically designed as part of a rotation in developmental pediatrics or as part of a resident retreat.
3. Frequently, university medical centers have specially trained facilitators who are available to lead such group discussions or seminars.

4. Child Abuse and Neglect

Objectives

The objectives of this section are to enable the students to:

1. Describe major legal aspects regarding the reporting of child abuse and neglect.
2. Summarize the major etiological theories of child abuse and discuss how these affect the evaluation and management of an abused child.
3. Describe the common physical and developmental effects of violence on children and the factors that temper these effects.
4. Describe the incidence of sexual abuse and characteristics commonly manifested by the victims.
5. Demonstrate the physical and psychological effects of sexual abuse on children and adolescents, and discuss the seriousness of the impact on their overall health.
6. Enlist the physical and developmental-behavioral effects of neglect on children and adolescents.
7. Define child neglect and contrast its etiology, implications, and diagnosis with child abuse.

8. Evaluate and appropriately manage victims of child abuse and neglect.

Potential Learning Experiences

1. Child abuse most commonly presents in primary care and urgent care settings. Faculty in these settings will have the most opportunities to supervise assessments of possible child abuse and neglect.
2. In programs with a team approach to assessment of suspected abuse, residents can serve on a rotation with the team or be on call for abuse assessments with other members of the team.
3. Arrange for supervised community visits to children's protective services and foster care settings.

Therapeutic Modalities/Services

1. Skills in Management

- **Anticipatory Guidance**

Objectives

The objectives of this section are to enable the students to:

1. Determine that anticipatory guidance is used to change or enhance behaviors to promote the health, growth, and development of children
2. List at least five areas of anticipatory guidance to be addressed that are specific for each of the recommended health supervision visits for infants, children, and adolescents (e.g., feeding, safety, parent/child interaction, health promotion and illness prevention, oral health, family relationships, community interaction, etc.).
3. Use counseling, pamphlets, and audiovisual resources to deliver effective anticipatory guidance for each of the recommended health supervision visits.

Potential Learning Experiences

1. The clinic is the principal setting for providing anticipatory guidance. Residents should be expected to incorporate anticipatory guidance activities appropriate to the age and developmental stage of the child at each well-care visit.

- **Counseling and Referral Skills**

Objectives

The objectives of this section are to enable the students to:

1. Demonstrate ability to form therapeutic relationships with children and families and elicit concerns, attributions, and expectations for interventions.
2. Counsel parents with developmental, behavioral, and family concerns.
3. Counsel the older child and adolescent with developmental variation and problem level concerns.
4. Recognize the limitations of counseling skills, and recognize indications for referral to other mental health or developmental professionals.
5. Make effective referrals to other professionals when indicated.
6. Describe barriers to children receiving mental health services.

Potential Learning Experiences

1. Use a discussion session during a block rotation to focus on the referral process and the many factors influencing whether a family will follow through with referrals.
2. Have residents research community resources for families with children having developmental-behavioral problems. Research can include making appointments to visit at least one site as well as putting together a written description of services provided. A central data bank of resident site visits and descriptions can be compiled for use when making referrals.

o Behavioral Treatment Methods

Objectives

The objectives of this section are to enable the students to:

1. Demonstrate the understanding of basic principles of behavioral treatments including positive reinforcement, punishment, rewards, shaping, and modeling.
2. Conduct a functional analysis of behavior before initiating a behavioral treatment recommendation.
3. Apply techniques appropriately to behavioral problems when indicated (e.g., urine alarm conditioning methods for nocturnal enuresis; time-out for mild aggressive behavior; contingency charts for improving compliance with household chores).
4. Recognize when the family needs to be referred to a behavioral specialist for further evaluation or counseling.

Potential Learning Experiences

1. Provide a four-part seminar series on behavioral interventions.
   Session 1 provides a review of basic learning theory.
   Session 2 is focused on conducting a behavioral assessment.
   Session 3 involves discussing intervention techniques.
   Session 4 consists of resident case presentations in which they apply the theory and techniques to clinical practice with an actual patient.
2. Provide flexibility in scheduling patients for occasional extended primary care clinic sessions. These may allow for 1-hour appointments and fewer overall patients, perhaps once per month, so that the resident can schedule a patient who needs additional time for counseling. These sessions could be overseen by the developmental pediatrics faculty.

o Basic Psychopharmacotherapy

Objectives

The objectives of this section are to enable the students to:

1. List indications for the use of medications in the management of common mental diagnoses in pediatrics, such as ADHD and mild depression.
2. List the stimulant class medications most commonly used in the treatment of ADHD, their benefits, side effects, and risks.
3. Describe the second-line medications most commonly used to treat ADHD either alone or in conjunction with stimulant medication, along with their benefits and side effects.

4. Identify antidepressant medications used in pediatric populations as adjunct treatment for ADHD and for mild depression in adolescents.
5. Describe management strategies for patients who have poor response to medication or for whom medication no longer seems as effective as in the past.
6. Recognize other medications that may be prescribed as treatment for children with psychiatric conditions.

Potential Learning Experiences

1. Learning experiences in specialty clinic settings, such as child psychiatry offices or behavior problem clinics, can give residents opportunities to see

first-hand the assessment and follow-up of children with common mental diagnoses such as ADHD and mild depression.
2. The resident should have the opportunity to manage patients with ADHD through his or her ongoing primary care clinic experience. This management should include the diagnostic process, development of a treatment plan, and prescribing and monitoring medications as appropriate.
3. Present and discuss case vignettes describing patients for whom medication is about to be prescribed for the first time; for a patient who experiences undesirable side effects; and for a patient whose medication is no longer as effective as it was in the past. These vignettes should include additional information pertinent to proper management, such as any changes in the home or school environment, other social stressors, or other health concerns.

o Acute Care

Objectives

The objectives of this section are to enable the students to:

1. Demonstrate competency to diagnose and treat acute infections of children with disabilites.
2. Describe the benefits of competence in neurodisability
3. Identify patients who would benefit from initiation of developmental rehabilitation while they are admitted.
4. Function as an effective member of a developmental team in delivering both acute and rehabilitation care to patients with special needs.

Potential Learning Experiences

1. Residents should participate in on call rotation in the special needs ward setting to get experience in treating acute on chronic conditions like fever, chest infections, seizures in patients with cerebral palsy, global delays and down syndrome etc.
2. Resident should become competent in chest physiotherapy and nasogastric feeding principles.

Care Coordination

Objectives

The objectives of this section are to enable the students to:

1. Define care coordination in the context of pediatric care.
2. Describe the benefits of care coordination.
3. Screen patients who would benefit from care coordination (in addition to traditional medical care), e.g., home ventilation patients, early intervention, behavioral/ mental health problems, chronic diseases.
4. Function as an effective member of a care coordination team in delivering care to patients with special needs.

Potential Learning Experiences

1. Residents can participate in clinical experiences in community- based programs that provide care coordination (e.g., early intervention programs, mental health centers, managed care organizations).

2. Knowledge of Other Professional's Treatments

Objectives

The objectives of this section are to enable the students to:

1. Recognize the activities that encompass the major psychotherapeutic modalities with children, adolescents, and families, including:
   - Behavioral/cognitive treatments.
   - Individual psychotherapy.
   - Family therapy.
   - Play therapy.
   - Group therapy.
   - Sensory therapy
   - Occupational therapy
2. Recognize when a child or family might benefit from a referral to receive the above services.
3. Acquire knowledge about early intervention (EI), including:
   - Know criteria for eligibility including establishing risk conditions.
   - Local resources and service providers.
   - Procedures for identifying children for potential eligibility for services.
   - Specific steps within the state for referring a child into the EI system.

- Physician's role in providing a medical home and assistance in ongoing service coordination for children receiving EI services.

4. Acquire knowledge about educational interventions, including:
   - Legislation related to mandates for educational services for handicapping conditions.
   - Handicapping conditions recognized by the public educational system.
   - Multifactored evaluation procedures used for determining eligibility for special educational services.
   - Physician's role in ongoing service coordination for children receiving special education services.
5. Recognize when a child or family might benefit from a referral to receive therapeutic interventions such as:
   - Speech and language therapies.
   - Occupational and physical therapies.
   - Clinical hypnosis.
   - Biofeedback.
   - Emerging gene therapies.

Potential Learning Experiences

1. Residents should be exposed to a variety of mental health professionals in settings using the above psychotherapeutic approaches. For example, have residents observe and report similarities and differences among children and techniques of therapists who use behavioral approaches versus those who use play therapy. Participate in a family and group therapy session.
2. Attend a school meeting to determine a child's eligibility for special services.
3. Observe other professionals providing services to one of the resident's own primary care clinic patients.
4. Participate as a member of an interdisciplinary team (e.g., developmental disabilities team, EI collaborative group, rehabilitation team).
5. Review a sample individual family service plan (IFSP) on a patient the resident is following; review it with a preceptor so that the resident can become familiar with the format and type of information it contains.
6. Attend an IFSP meeting along with a parent of a child the resident follows in primary care clinic.
7. Attend a local early intervention coordinating council meeting.

Knowledge of Hospital and Community

- Resources and Support Services

Objectives

The objectives of this section are to enable the students to:

1. Have a working knowledge of roles and functions of the non medical resources and support programs serving children and families within the hospital setting, such as social work, child life, allied health therapies, pastoral care, and NICU developmental specialists.
2. Have a working knowledge of the range of community based resources for children and families as well as what services are provided and the characteristics of client populations served at different types of sites.
3. Be able to investigate the types and quality of resources for families and children in any community in which they practice.

Potential Learning Activities

- Residents can spend one-half day each week during the block rotation with members of the different support service programs in the hospital.

LOG BOOK

The residents must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for MD examination. Log book should include adequate number of diagnostic and therapeutic procedures observed and performed, the indications for the procedure, any complications and the interpretation of the results, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Format of Log Book is as follows:

Candidate's Name: ----------

Roll No. _____ Supervisor ----------

The following procedures shall be entered in the log book as per format

Procedures:

1.	Venous Cannulation	25
2.	Lumber Puncture	20
3.	Pleural Tap	2

4.	Peritoneal Tap	2
5.	Endotracheal Intubation	5
6.	Cardiopulmonary Resuscitation	10
7.	Exchange Transfusions	2
8.	Emergency Pneumothorax Drainage (Needle Aspiration)	1

Procedures Performed

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure Performed	Supervisor's Signature
1					
2					
3					
4					

Emergencies Handled

Sr. #	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure/ Management	Supervisor's Signature
1					
2					
3					
4					

Case Presented

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Case Presented	Supervisor's Signature
1				
2				
3				
4				

Seminar/Journal Club Presentation

Sr.#	Date	Topic	Supervisor's signature
1			
2			
3			
3			

Evaluation Record
(Excellent, Good, Adequate, Inadequate, Poor)

At the end of the rotation, each faculty member will provide an evaluation of the clinical performance of the fellow.

Sr.#	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Supervisor's Signature
1				
2				
3				
4				

METHODS OF INSTRUCTION/COURSE CONDUCTION

As a policy, active participation of students at all levels will be encouraged. Following teaching modalities will be employed:

1. Lectures
2. Seminar Presentation and Journal Club Presentations
3. Group Discussions
4. Grand Rounds
5. Clinico-pathological Conferences
6. SEQ as assignments on the content areas
7. Skill teaching in ICU, emergency and ward settings
8. Self study, assignments and use of internet
9. Bedside teaching rounds in ward
10. OPD & Follow up clinics
11. Long and short case presentations

In addition to the conventional teaching methodologies interactive strategies like conferences will also be introduced to improve both communication and clinical skills in the upcoming consultants. Conferences must be conducted regularly as scheduled and attended by all available faculty and residents. Residents must actively request autopsies and participate in formal review of gross and microscopic pathological material from patients who have been under their care. It is essential that residents participate in planning and in conducting conferences.

1. Clinical Case Conference

Each resident, except when on vacation, will be responsible for at least one clinical case conference each month. The cases discussed may be those seen on either the consultation or clinic service or during rotations in specialty areas. The resident, with the advice of the Attending Physician on the Consultation Service, will prepare and present the case(s) and review the relevant literature.

2. Monthly Student Meetings

Each affiliated medical college approved to conduct training for MD Internal Medicine will provide a room for student meetings/discussions such as:

a. Journal Club Meeting
b. Core Curriculum Meetings
c. Skill Development

a. Journal Club Meeting

A resident will be assigned to present, in depth, a research article or topic of his/her choice of actual or potential broad interest and/or application. Two hours per month should be allocated to discussion of any current articles or topics introduced by any participant. Faculty or outside researchers will be invited to present outlines or results of current research activities. The article should be critically evaluated and its applicable results should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department.

b. Core Curriculum Meetings

All the core topics of Medicine should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. Evaluation will be done at the student and faculty level. The students will be given an evaluation form for each session for commenting on the:

a) Course Contents
b) Facilitation
c) Use of Audio visual aids

The teachers will their comments at the end of each module to:

a) Review the contents
b) Add changes to teaching methodologies and exams.

c. Skill Development

Two hours twice a month should be assigned for learning and practicing clinical skills.

List of skills to be learnt during these sessions is as follows:

1. Residents must develop a comprehensive understanding of the indications, contraindications, limitations, complications, techniques, and interpretation of results of those technical procedures integral to the discipline (mentioned in the Course outlines).
2. Residents must acquire knowledge of and skill in educating patients about the technique, rationale and ramifications of procedures and in obtaining procedure-specific informed consent. Faculty supervision of residents in their performance is required, and each resident's experience in such procedures must be documented by the program director.
3. Residents must have instruction in the evaluation of medical literature, clinical epidemiology, clinical study design, relative and absolute risks of disease, medical statistics and medical decision-making.
4. Training must include cultural, social, family, behavioral and economic issues, such as confidentiality of information, indications for life support systems, and allocation of limited resources.
5. Residents must be taught the social and economic impact of their decisions on patients, the primary care physician and society. This can be achieved by attending the bioethics lectures

6. Residents should have instruction and experience with patient counseling skills and community education.
7. This training should emphasize effective communication techniques for diverse populations, as well as organizational resources useful for patient and community education.
8. Residents may attend the series of lectures on Nuclear Medicine procedures (radionuclide scanning and localization tests and therapy) presented to the Radiology residents.

9. Residents should have experience in the performance of clinical laboratory and radionuclide studies and basic laboratory techniques, including quality control, quality assurance and proficiency standards.

3. Annual Grand Meeting

Once a year all residents enrolled for MD Development Paediatrics should be invited to the annual meeting at UHS Lahore.
One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making. The research work done by residents and their literary work may be displayed. In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

EVALUATION & ASSESSMENT STRATEGIES

Assessment

It will consist of action and professional growth oriented *student-centered integrated assessment* with an additional component of *informal internal assessment*, *formative assessment* and measurement-based *summative assessment*.

Student-Centered Integrated Assessment

It views students as decision-makers in need of information about their own performance. Integrated Assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourages students to **'own'** the evaluation and to use it as a basis for self-improvement. Therefore, it tends to be growth-oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible and action-oriented.

In the proposed curriculum, it will be based on:

- Self Assessment by the student
- Peer Assessment
- Informal Internal Assessment by the Faculty

Self Assessment by the Student

Each student will be provided with a pre-designed self-assessment form to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

Peer Assessment

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback

according to the prescribed guidelines and should be non-judgmental in nature. This will enable students to become good mentors in future.

Informal Internal Assessment by the Faculty

There will be no formal allocation of marks for the component of Internal Assessment so that students are willing to confront their weaknesses rather than hiding them from their instructors.

It will include:

a. Punctuality
b. Ward work
c. Monthly assessment (written tests to indicate particular areas of weaknesses)
d. Regular assignments
e. Participation in interactive sessions

Formative Assessment

Will help to improve the existing instructional methods and the curriculum in use

Feedback to the faculty by the students:

After every three months, students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strengths and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

Summative Assessment

It will be carried out at the end of the programme to empirically evaluate **cognitive, psychomotor** and **affective domains** in order to award diplomas for successful completion of courses.

MD DEVELOPMENTAL PAEDIATRICS EXAMINATIONS

Intermediate Examination MD Developmental Paediatrics Total Marks: 500

All candidates admitted in MD Developmental Paediatrics course shall appear in Intermediate examination at the end of 2nd calendar year.

There shall be one written papers of 300 marks each, clinical, TOACS/OSCE & ORAL of 200 marks.

At the end of 2nd year M.D. Developmental Paediatrics Programme

Written Examination	=	300 Marks
Clinical and TOACS/OSCE & ORAL	=	200 Marks
Total	=	500 Marks

Written Paper	**=**	**300 Marks**
MCQs	=	100 (2 Marks each MCQ)
SEQs	=	10 Marks (10 Marks each SEQ)
Clinical, TOACS/OSCE & ORAL	**=**	**Total Marks 200**
a) 4 short Cases	=	100 marks
b) Long Case	=	50 marks
c) TOACS/OSCE & Oral	=	50 marks

Written Paper

Principles Paediatric Medicine	=	70 MCQs	7 SEQs
Specialty	=	10 MCQs	1 SEQ
Basic Sciences	=	20 MCQs	2 SEQs
Physiology	=	8 MCQs	1 SEQ
Pharmacology	=	4 MCQs	-------
Pathology	=	8 MCQs	1 SEQ

Final Examination of MD Developmental Paediatrics
Total Marks: 1500

All candidates admitted in MD course shall appear in examination at the end of structured training programme (end of 5th calendar year) and after clearing Intermediate Examination.

There shall be two written papers of 250 marks each, Clinical, TOACS/OSCE & Oral of 500 marks, Internal assessment of 100 marks and thesis examination of 400 marks.

Topic included in paper 1

1. Knowledge of Child Development	50 MCQs
2. Communication Skills	25 MCQs
3. Assessment Skills	25 MCQs

Topic included in paper 2

1. Spectrum of Child Development	50 MCQs
2. Environmental Influences on Development	25 MCQs
3. Therapeutic Modalities/Services	25 MCQs

Components of Final Examination

Theory

Paper I	**250 Marks**	**3 Hours**
05 SEQs	50 Marks	
100 MCQs	200 Marks	

Paper II	**250 Marks**	**3 Hours**
05 SEQs	50 Marks	
100 MCQs	200 Marks	

Only those candidates, who pass in theory papers, will be eligible to appear in the Clinical, TOACS/OSCE & Oral.

Clinical, TOACS/OSCE & Oral	**500 Marks**
Four short cases	200 Marks
One long case:	100 Marks
TOACS/OSCE & Oral	200 Marks

Continuous Internal Assessment	**100 Marks**

Thesis Examination	**400 Marks**

All candidates admitted in MD courses shall appear in thesis examination at the end of 5th calendar year of the MD programme. The examination shall include thesis evaluation with defense.

RECOMMENDED BOOKS

1. **Text book of Developmental Paediatrics** by Margaret Pollak, published by Churehill Livingstone; London, 1993.
2. **Developmental – Behavioural Paediatrics** by Levine Carey Crocker, published by Launders: 3rd edition: London, 1999.
3. **Early childhood development: Multicultural perspectives** by Jeffery Trauvick Smith published by Meril; New Jercy, 1997.
4. **Developmental Paediatrics** by K.S. Holt published by Butterworths: London, Boston, 1997.
5. **Prevention of Malnutrition and Rehabilitation of Malnourished children by Unicef, Nutrition Rehabilitation unit department of Paediatrics Unit II, Civil Hospital Karachi, Pakistan** 1991.
6. **The Developing Child by Helen** Bee. 9th edition published by Allyn and Bacon: Boston, London, 2000.
7. **The Development of the Infant & Young Child: Normal & abnormal** by D llingworth, 4th edition 1970.
8. **Developmental follow-up: Concepts, Domaine, and Method** by Sarah L. Freudman published by Academic Press; New York, 1994.
9. **The Development of Children** by Cole Michael. 5th edition, worth publishers: New York, 2005.
10. **Developmental & Behavioural Paediatrics, A Handbook of Primary care:** Second edition by Steven Parker, Barry Luckerman, Marihyn Augustyn.

11. Rana M. H., Ali S. Mustafa M. **A Handnook of Behavioural Sciences for Medical and Dental Students.** Lahore: University of Health Science; 2007.
12. Fathalla M. F. and Fathalla M. M. F. **A Practical Guide for Health Researcher.** Cairo: World Health Organization; 2004.
13. Abramson JH, Abramson ZH. Survey methods in community medicine, fifth edition. Edinburgh: Churchill Livingstone; 1999.
14. Altman DG. Practical statistics for medical research. London: Chapman and Hall; 1991.
15. Bowling A. Research methods in health: investigating health and health services, 2nd ed. Buckingham: Open University Press; 1997.
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APPENDIX "E"

(See Regulation 9-iii)

MANDATORY WORKSHOPS

1. Each candidate of MD/MS/MDS program would attend the 04 mandatory workshops and any other workshop as required by the university.
2. The four mandatory workshops will include the following

   a. **Research Methodology and Biostatistics**
   b. **Synopsis Writing**
   c. **Communication Skills**
   d. **Introduction to Computer / Information Technology and Software programs**

3. The workshops will be held on 03 monthly basis.
4. An appropriate fee for each workshop will be charged.
5. Each workshop will be of 02 - 05 days duration.
6. Certificates of attendance will be issued upon satisfactory completion of workshops.

APPENDIX "F"
(See Regulation 9xxiii, 13, 14 & 16)

CONTINUOUS INTERNAL ASSESSMENTS

a) Workplace Based Assessments

Workplace based assessments will consist of Generic as well as Specialty Specific Competency Assessments and Multisource Feedback Evaluation.

Generic Competency Training & Assessments

The Candidates of all MD / MS / MDS programs will be trained and assessed in the following five generic competencies.

i. **Patient Care.**

a. Patient care competency will include skills of history taking, examination, diagnosis, plan of investigation, clinical judgment, plan of treatment, consent, counseling, plan of follow up, communication with patient / relatives and staff.

b. The candidate shall learn patient care through ward teaching, departmental conferences, morbidity and mortality meetings, core curriculum lectures and training in procedures and operations.

c. The candidate will be assessed by the supervisor during presentation of cases on clinical ward rounds, scenario based discussions on patient management, multisource feedback evaluation, Direct Observation of Procedures (DOPS) and operating room assessments.

d. These methods of assessments will have equal weightage.

ii. **Medical Knowledge and Research**

a. The candidate will learn basic factual knowledge of illnesses relevant to the specialty through lectures/discussions on topics selected from the syllabus, small group tutorials and bed side rounds.

b. The medical knowledge/skill will be assessed by the teacher during case based discussions and presentations to the supervisors / consultants / senior postgraduate trainees.

c. The candidate will be trained in designing research project, data collection, data analysis and presentation of results by the supervisor.

d. The acquisition of research skill will be assessed as per regulations governing thesis evaluation and its acceptance.

iii. **Practice and System Based Learning**

a. This competency will be learnt from journal clubs, review of literature, policies and guidelines, audit projects, medical error investigation, root cause analysis and awareness of healthcare facilities.

b. The assessment methods will include case studies, presentation in morbidity and mortality review meetings and presentation of audit projects if any.

c. These methods of assessment shall have equal weight-age.

iv. **Communication Skills**

a. These will be learnt from role models, supervisor and workshops.

b. They will be assessed by direct observation of the candidate whilst interacting with the patients, relatives, colleagues and with multisource feedback evaluation.

v. **Professionalism as per Hippocratic Oath**

a. This competency is learnt from supervisor acting as a role model, ethical case conferences and lectures on ethical issues such as confidentiality, informed consent, end of life decisions, conflict of interest, harassment and use of human subjects in research.

b. The assessment of residents will be through multisource feedback evaluation according to proformas of evaluation and its' scoring method.

pecialty Specific Competencies

i. The candidates will be trained in operative and procedural skills according to a quarterly based schedule.

ii. The level of procedural competence to be achieved at various levels of training will be according to a competency table to be developed by each specialty.

iii. The following key will be used for assessing operative and procedural competencies:

a. **Level 1 Observer status**

The candidate physically present and observing the supervisor and senior colleagues

b. **Level 2 Assistant status**
The candidate assisting procedures and operations

c. **Level 3 Performed under supervision**
The candidate operating or performing a procedure under direct supervision

d. **Level 4 Performed independently**
The candidate operating or performing a procedure without any supervision

iv. **Procedure Based Assessments (PBA)**

a. Procedural competency will assess the skill of consent taking, preoperative preparation and planning, intraoperative general and specific tasks and postoperative management

b. Procedure Based assessments will be carried out during teaching and training of each procedure.

c. The assessors may be supervisors, consultant colleagues and senior residents.

d. The standardized forms will be filled in by the assessor after direct observation.

e. The resident's evaluation will be graded as satisfactory, deficient requiring further training and not assessed at all.

f. Assessment report will be submitted to the Registrar on 03 monthly basis.

g. A satisfactory score will be required to be eligible for taking final examination.

Multisource Feedback Evaluation

i. The supervisor would ensure a multisource feedback to collect peer assessments in medical knowledge, clinical skills, communication skills, professionalism, integrity, and responsibility.

ii. Satisfactory annual reports will be required to become eligible for the final examination

b) Completion Of Candidate's Training Portfolio

i. The Candidate's Training Portfolio (CTP) will be published (or computer based portfolio downloadable) by the university.

ii. The candidates would either purchase the CTP or download it from the KEMU web site.

iii. The portfolio will consist of the following components

a) Enrollment details.

b) Candidate's credentials as submitted on the application for admission form.

c) Timeline of scheduled activities e.g dates of commencement and completion of training, submission of synopsis and thesis, assessments and examination dates etc **(Appendix H)**

d) Log Book of case presentations, operations and procedures recorded in an appropriate format and validated by the supervisor.

e) Record of participation and presentations in academic activities e.g lectures, workshops, journal clubs, clinical audit projects, morbidity & mortality review meetings, presentation in house as well as national and international meetings.

f) Record of Publications if any.

g) Record of results of assessments and examinations if any

h) Synopsis submission proforma and IRB proforma and AS&RB approval Letter

i) Copy of Synopsis as approved by AS&RB

iv. Candidates Training Portfolio shall be assessed as per proforma given in **"Appendix-G".**

pervisor's Annual Review Report.

This report will consist of the following components:-

i. Verification and validation of Log Book of operations & procedures according to the expected number of operations and procedures performed (as per levels of competence) determined by relevant board of studies.

ii. A 90 % attendance in academic activities is expected. The academic activities will include: Lectures, Workshops other than mandatory workshops, Journal Clubs, Morbidity & Mortality Review Meetings and Other presentations.

iii. Assessment report of presentations and lectures

iv. Compliance Report to meet timeline for completion of research project.

v. Compliance Report on Personal Development Plan.

vi. Multisource Feedback Report, on relationship with colleagues, patients.

vii. Supervisor will produce an annual report based on assessments as per proforma in appendix-G and submit it to the Examination Department.

viii. 75 % score will be required to pass the Continuous Internal Assessment on annual review.

APPENDIX " G "

(See Regulation 9ix, 9xxiii-d, 10, 11, 14 & 16)

Supervisor's Evaluation

PROFORMA FOR CONTINUOUS INTERNAL ASSESSMENTS

1.	**Generic Competencies**		
	(Please score from 1 – 100. 75% shall be the pass marks)	**Component Score**	**Score achieved**
	i. Patient Care	20	
	ii. Medical Knowledge and Research	20	
	iii. Practice and System Based Learning		
	• Journal Clubs	04	
	• Audit Projects	04	
	• Medical Error Investigation and Root Cause Analysis	04	
	• Morbidity / Mortality / Review meetings	04	
	• Awareness of Health Care Facilities	04	
	iv. Communication Skills		
	• Informed Consent	10	
	• End of life decisions	10	
	v. Professionalism		
	• Punctuality and time keeping	04	
	• Patient doctor relationship	04	
	• Relationship with colleagues	04	
	• Awareness of ethical issues	04	
	• Honesty and integrity	04	
2.	**Specialty specific competencies**		
	Please score from 1 – 100. 75% shall be the pass marks		**Score achieved**
	Operative Skills / Procedural Skills		
3.	**Multisource Feedback Evaluation**(Please score from 1 – 100. 75% shall be the pass marks)		
4.	**Candidates Training Portfolio** (Please score from 1 – 100.75% shall be the pass marks)		
	(Please score from 1 – 100. 75% shall be the pass marks)	**Component Score**	**Score achieved**
	i. Log book of operations and procedures	25	
	ii. Record of participation and presentation in academic activities	25	
	iii. Record of publications	25	
	iv. Record of results of assessments and examinations	25	