

**CURRICULUM/STATUTES ®ULATIONS
FOR
4 YEARS DEGREE PROGRAMME
IN
PAEDIATRICS
(MD Paediatrics)**



**RAWALPINDI MEDICAL UNIVERSITY
RAWALPINDI**

STATUTES

Nomenclature of the Proposed Course

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

Course Title:

MD Paediatrics

Training Centers

Departments of Paediatrics (accredited by RMU) in affiliated institutes of RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI.

Duration of Course

The duration of MD Paediatrics course shall be four (4) years, with structured training in a recognized department under the guidance of an approved supervisor.

After admission in MD Pediatrics Program the resident will spend first one year in the relevant Department of Pediatrics with the following plan:

- The first 06 Months will be an Induction period during which resident will get orientation in the chosen discipline.
- On completion of Induction period the resident will be rotated through the basic essential components/sections of a Pediatric unit, including, neonatology, Paeds emergency, Paeds OPD and Preventive Paeds.
- He will also complete the mandatory workshops (Appendix E).

□ The research project will be designed and the synopsis will be prepared and submitted.

During the 2nd, 3rd & 4th years, of the Program, there will be two components of the training

- 1) Training in Paediatrics
- 2) Research and Thesis writing

The candidate will undergo clinical training to achieve the educational objectives of M.D. Pediatrics Program (knowledge & Skills) along with rotational placements in any of Three subspecialties of Pediatrics during 3rd year of the program for 2 months each as follows:

1. Perinatology
2. Pediatric Cardiology
3. Pediatric Dermatology
4. Pediatric Nephrology
5. Pediatric Gastroenterology
6. Pediatric Neurology
7. Pediatric Hematology/Oncology
8. Pediatric Surgery
9. Pediatric Endocrinology
10. Developmental Pediatrics
11. Child Psychiatry

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

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

Admission Criteria

Applications for admission to MD Training Programs 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 minimum of 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 RMU as per prescribed Registration Regulations.

7. 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).

- The University can suspend accreditation of Paediatrics training program on temporary or permanent basis, 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.

Supervisor Eligibility Criteria:

- Minimum five years after post-graduation
- Should have a Major Degree/Diploma, e.g. FCPS, MD, MRCP, DABP (DCH, MCPS will not qualify)
- Should have attended training workshops on:
 - Research Methodology & Biostatistics
 - Communication Skills
 - Assessment of Competence
 - Education Planning & Development

AIMS AND OBJECTIVES OF THE COURSE

AIM

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

GENERAL OBJECTIVES

MD Paediatrics training should enable a resident in:

- 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.
- 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.
- Data 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.
- 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.

□ **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.

□ **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.

Bioethics of Patient Care - The development of a functional understanding of informed consent, advanced directives, and the physician-patient relationship. The trainees shall be able to handle End of Life issues, conflicting opinions, palliative care; organ donations and issues of gender dysphoria.

□ **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.

□ **Preventive Medicine** - The promotion of health via immunizations, periodic health screening, and risk factor assessment and modification.

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

SPECIFIC LEARNING OUTCOMES

Following competencies are expected from a resident completing MD Paediatric training;

- Acquisition of basic knowledge of growth and development (physical, physiologic and psychosocial) of a child and of its birth clinical application from through adolescence.
- Identify social, economic, environ-mental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to children
- Acquisition of the knowledge necessary for the diagnosis and initial management of common pediatric acute and chronic illnesses.
- Structured didactic exposure and evaluation covering the full spectrum of outpatient care of the pediatric patient.
- An understanding of the influence of family, community and society on the child in health and disease.
- Gain experience in the day-to-day management of seriously ill children. This management will include:
 - o Monitoring patient medications
 - o Calculation of fluids and electrolytes, both deficit and maintenance
 - o Calculation and management of caloric intake
 - o Recording of output (urine and stool)
 - o Interpretation of laboratory and imaging studies
 - o Delivering "bad news"
 - o Discharge planning

- Be able to plan rehabilitation of children suffering from chronic illness and handicap, and those with special needs
- Demonstrate the ability to formulate a reasonable differential diagnosis based on the history obtained and the physical examination performed
- Development of communication skills that will facilitate the clinical interaction with children, adolescents and their families and thus ensure that complete, accurate data are obtained and perform an appropriate physical examination.
- Use developmental assessment as part of the physical examination for all age groups. This includes an understanding of the administration of, and limitations of, the developmental screening test; this includes an understanding of the importance of gestational age in the developmental assessment of young children
- Recognize the importance of determining the psychosocial condition (status) of the parents and the child
- Measure and understand the vital signs in children of various age groups · Routinely and accurately measure, record, and plot growth parameters on appropriate growth charts.
- Health supervision
 - o Immunization information and advice
 - o Safety issues
 - o Dietary advice
 - o Information on expected child-development
 - o Age-appropriate behavioral concerns
 - o Conduct health supervision visits on healthy adolescents incorporating of preventive counseling and identification high-risk behaviors in these key areas:

- Sexuality/sexual activity (sexual orientation, contraception, STDs)
- Substance abuse, including alcohol
- Tobacco use
- Personal safety (motor vehicles and seatbelt use, firearms, violence)
- Identify common chromosomal disorders and is able to provide genetic counseling · Assess, classify and rehabilitate nutritional disorders in child
- Decide and implement suitable treatments considering safety, cost factors, complications and side effects
- Advise mothers with concerns regarding breastfeeding
- Experience the process of resuscitation and stabilization of the newborn
- Become familiar with the APGAR scoring system and its interpretation
- Gain experience in the diagnosis and management of fluid and electrolyte disturbances
- Describe the physical and behavioural signs of the child who has been physically or Sexually abused and his/her responsibilities for reporting these suspected events
- Demonstrate professionalism in relationships with the pediatric patient and family
- Self-analyze to become aware of personal biases or prejudices
- Respect the cultural differences found in varying patient populations
- Observe rules of privacy and confidentiality, particularly in regards to the adolescents
- Develop critical thinking skills and the ability to use evidence-based medicine
- Development of strategies for health promotion as well as disease and injury prevention
- Utilize community agencies, practicing physicians and community health care programs to facilitate optimal care

- Research a particular subject in depth and utilize appropriate learning resources including texts and Literature, consultation with peers, senior colleagues and/or allied professionals to communicate this clearly and effectually in writing.
- Develop positive attributes which will serve as the basis for a successful professional

Procedural Skills:

Residents must be able to perform competently all medical and invasive procedures essential for the practice of general and advanced paediatrics. This includes technical proficiency in taking informed consent, performing by using appropriate indications, contraindications, interpretations of findings and evaluating the results and handling the complications of the related procedures mentioned in the syllabus

Additional Procedural Skills: Residents should be instructed in additional procedural skills that will be determined by the training environment, residents' practice expectations, the availability of skilled teaching faculty, and privilege delineation.

Interpretative skills: Residents should be able to interpret basic as well as advanced laboratory data as related to the disorder/disease

Research: All residents in the categorical program are required to complete an academic outcomes-based research project during their training. This project can consist of original bench top laboratory research, clinical research or a combination of both. The research work shall be compiled in the form of a thesis, which is to be submitted for evaluation by each resident before end of the training. The designated Faculty will organize and mentor the residents through the process, as well as journal clubs to teach critical appraisal of the literature.

Outpatient Experiences:

Residents should demonstrate expertise in diagnosis and management of patients in acute care clinics and longitudinal clinic and gain experience in various paediatric sub-specialty disciplines like dermatology, physical medicine and rehabilitation, child psychiatry, preventive paediatrics, immunization, growth and nutrition

Interdisciplinary Medicine:

Adolescent Medicine, Emergency Medicine, General Surgery, Gynecology, Occupational Medicine, Ophthalmology, Orthopedics and Sports Medicine, Otolaryngology, Urology, Ophthalmology, Pediatric Radiology etc.

Community Practice:

Residents experience the practice of medicine in a non-teaching hospital setting. The rotation may be used to tryout a practice that the resident later joins, to learn the needs of referring physicians or to decide on a future career path.

REGULATIONS

Scheme of the Course

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

Course Structure	Components	Examination
End of 1st year	<ul style="list-style-type: none"> • Principles of Paediatric Medicine • Applied Basic Sciences (Physiology, Pharmacology, Pathology) 	<p>Abridged Examination at the end of 1st year of MD Paediatrics programme.</p> <p><input type="checkbox"/> Written:</p> <p>Paper MCQs = 300 Marks (General Paediatrics & Applied Basic Sciences)</p> <p><input type="checkbox"/> Video Projected clinical Exam = 50 Marks</p>
End of Final year	<ul style="list-style-type: none"> • Professional Education in Paediatrics Training in Paediatrics during 2nd, 3rd & 4th years of MD programme. • Rotations in related fields <p>Research component of Final Exam Research work/Thesis must be completed and Thesis be submitted at least 6 months before the end of Final Year Program.</p>	<p>Final Examination in specialized components of Paediatrics at the end of final year (4th) of MD programme</p> <ul style="list-style-type: none"> • Written: Papers I & II: Problem-based MCQs and SAQs in the subject = 500 Marks • Clinical, TOACS/OSCE & ORAL = 500 Marks • Contribution Continuous Internal Assessment = 100 Marks • Thesis Evaluation = 400 Marks <p>Thesis Evaluation & Defense at the end of 4th year M.D Paediatrics.</p>

Abridged Examination

All candidates admitted in MD Paediatrics course shall appear in Abridged examination at the end of 1st calendar year.

Eligibility Criteria

To appear in Abridged Examination, a candidate shall be required

- a) To have submitted certificate of completion of mandatory workshops.
- b) To have submitted certificate of completion of one year of training from the supervisor/ supervisors of rotations.
- c) To have submitted assessment proforma from the supervisor on 03 monthly basis achieving a cumulative score of **75%**.
- d) To have submitted certificate of submission of synopsis
- e) To have submitted evidence of payment of examination fee.

Abridged Examination Schedule and Fee

- I. Abridged Examination at completion of one year of training, will be held twice a year.
- II. There will be a minimum period of 30 days between submission of applications for the examination and the conduction of examination.
- III. The university will determine examination fee periodically.
- IV. The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
- V. The Controller of Examination will issue Roll Number Slips on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee.

Components of abridge Examination

M.D. Paediatrics at the end of calendar of 1st calendar year of the programme

Written = 300 Marks

VPCE = 50 Marks

Total = 350 Marks

Written Exam

There will be 150 single best answer type MCQs with a total of 300 marks as follows:-

Principles of General Paediatrics = MCQs = 100 questions

Applied Basic Sciences = MCQs = 50 questions

Physiology/Biochemistry = 20 MCQs

Pharmacology = 10 MCQs

Pathology = 20 MCQs

Each correct answer to MCQ will carry 2 marks. Incorrect response will result in deductions of 0.5 marks. Duration of this exam will be 150 minutes.

Those who passed written examination will be eligible to appear in the video projected clinical exam.

The candidates scoring 50% marks will pass the written examination and will then be eligible to appear in the Video-Projected Clinical Examination

Four attempts (availed or unavailed) will be allowed to pass the written examination on three consecutive subsequent occasions.

Video Projected Clinical Part of Abridged Exam (VPCE) Total Marks= 50

The VPCE will consist of 25 videos/ Slides of clinical material and scenarios from General Paediatrics and related fields. Each Video/ slide will have one question and carry 2 marks.

Incorrect response will result in deduction of 0.5 marks. The Candidate securing 50% marks in VPCE will pass this part of exam

Declaration of Result

The Candidate will have to score 50% marks in written and video-projected clinical components and a cumulative score of 60% to be declared successful in the Abridged Examination.

Cumulative score of 60% marks to be calculated by adding up secured marks of each component of the examination and then calculating its percentage.

A maximum total of four consecutive attempts (availed or unavailed) will be allowed in the Abridged Examination during which the candidate will be allowed to continue his training program. If the candidate fails to pass his Abridged 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

All candidates admitted in MD Paediatrics course shall appear in Final examination at the end of structured training programme (end of 4th calendar year).

Eligibility Criteria:

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

- i) To have submitted the result of passing Abridged 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 accepted 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 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:
- | | |
|---|-------------------|
| <input type="checkbox"/> Multiple Choice Question paper | Total Marks = 400 |
| <input type="checkbox"/> Short Answer Question paper | Total Marks = 100 |

d) The candidates scoring 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 have to re-appear 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 10 minutes duration, 05 minutes will be for examining the patient and 05 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

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 RMU 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.

Continuous Internal Assessment (CIS)

Continuous Internal Assessment will be a stand-alone component. The marks for CIS as per 10% weightage formula will be 100 and will be added to the marks of other components of the final examination and of those of Thesis Evaluation as follows:

Thesis Evaluation:

According to the protocols defined by the University and would carry 400 marks.

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 and Toacs/OSCE & Oral 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, clinical, Toacs/OSCE & 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 may have at the most 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. The candidate duly recommended by the Supervisor shall submit thesis.
2. The minimum duration between approval of synopsis and submission of thesis shall be one year.
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 supervisor 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 consultation 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 Paediatrics Degree

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

CONTENT OUTLINE

For Abridged Examination in MD Paediatrics

1. Principles of Paediatrics

1. Nutrition:

Common Clinical Disorders:

- Maternal nutritional disorders; Impact on fetal outcome
- Nutrition for the low birth weight
- Breast feeding
- Infant feeding including complementary feeding
- Protein energy malnutrition
- Vitamin and mineral deficiencies
- Trace elements of nutritional importance
- Obesity
- Adolescent nutrition
- Nutritional management in diarrhea
- Nutritional management of systemic illnesses (celiac disease, hepatobiliary disorders, nephrotic syndrome)
- Parenteral and enteral nutrition in neonates and children.

Approach to Common Clinical Presentations:

- Lactation management and complementary feeding
- Protein energy malnutrition (underweight, wasting, stunting)
- Failure to thrive

2. Paediatric Infectious Disorders:

- Have the knowledge and skills to be able to assess and manage children presenting with infectious diseases and conditions
- Be able to formulate a likely differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible infectious complications of other system disorders
- Be able to select and interpret appropriate laboratory investigations, including microbiology and virology cultures, and understand the significance of results pertaining to all age-groups
- Understand when referral for specialist infectious disease or allergy assessment is appropriate
- Understand the causes of vulnerability to infection
- Understand the classification of infectious agents
- Understand the epidemiology, pathology and 'natural history' of common infections of the newborn and children in Pakistan and the public health policies associated with them
- Understand the importance of common infections, for example TB, Malaria, Hepatitis C
- Be able to follow agreed national and local guidelines on the notification of infectious diseases
- Understand the rationale for prescribing common antimicrobials
- Understand the indications for antimicrobial prophylaxis

Common Clinical Disorders:

- Principles and practices of infection control and isolation.
- Common infectious diseases including their epidemiology, etiologic pathogens, pathogenesis, clinical manifestations, differential diagnosis, appropriate application and interpretation of diagnostic tests, treatment and prophylaxis for:

- a. Respiratory tract infections
- b. Central nervous system infections
- c. Cardiovascular infections
- d. Fungal disease
- e. Mycobacterial infections
- f. Approach to the Patient with a Parasitic Infection
- g. Malaria
- h. Soft tissue, bone, and joint infections
- i. Fevers of unknown origin
- j. Infections in immunocompromised hosts
- k. Gastrointestinal tract infections
- l. Genitourinary tract infections including sexually transmitted diseases.
- m. Infections of indwelling venous and arterial catheters and prosthetic devices
- n. Nosocomial infections, in intensive care and general care settings
- o. Animal and human bite wounds.
- p. HIV infection and its associated complications
- q. Travel-related infections, diagnosis, treatment, and prevention
- r. Bioterrorism: identifying infections; understanding public health aspects.
 - i. Bacillus anthracis (Anthrax)
 - ii. Yersinia pestis (Plague)
 - iii. Variola Major (Smallpox)
 - iv. Francisellatularensis (Tularemia)
 - v. Clostridium botulinum (Botulism)

vi. Flavi viruses (Ebola, Marburg)

vii. Arenaviruses (Lassa)

- Active Immunization against infectious diseases
- Recommended immunization of infants, children and adolescents.
- Recommended immunizations for travelers in paediatric age groups.
- Hypersensitivity tests and desensitization
- Basic principles of anti-infective therapy, including the use of antibacterial, antiviral, antifungal, anti-mycobacterial, and anti-parasitic agents with regard to mechanisms of action, spectra of activity, doses and regimens, drug interactions, mechanisms of resistance, appropriate clinical applications, and adverse effects/toxicities.

Approach to Common Clinical Presentations:

- Acute onset pyrexia
- Prolonged pyrexia
- Septic shock
- Anaphylaxis
- Abdominal or pelvic pain
- Cellulitis
- Diarrhea
- Dysuria
- Facial or ear pain
- Fever, including fever in immunosuppressed patient
- Hepatitis

- Joint effusion
- Limb, sacral ulcers
- Lymphadenopathy
- Meningitis
- Penile discharge
- Cervicitis, vaginal discharge
- Prevention, public health concerns (immunization, susceptibility and exposure , prophylaxis)
- Productive cough, pulmonary infiltrate
- Rash (cellulitis, erythema, petechiae, purpura, tinea)
- Red eye
- Skin abscess
- Sore throat, painful swallowing
- Vomiting

3. Paediatric Emergency and Critical Care:

- Be able to recognize the patient at risk for an obstructed airway
- Be able to recognize the patient in respiratory failure or arrest
- Be able to formulate a differential diagnosis by age of a patient with acute life threatening respiratory difficulty and prioritize management
- Understand the life-threatening nature of these problems and know when to call for help of more experienced colleagues
- Be able to lead a resuscitation team
- Be able to recognize the child in shock and formulate a differential diagnosis between compensated and uncompensated shock
- Understand the indications, pharmacology, contra indications, dose calculation and routes of administration of drugs used in resuscitation and in the stabilization of children in cardiac arrest or failure
- Be able to obtain venous and arterial access including IV & central lines
- Be able to ensure appropriate non-invasive and invasive monitoring including arterial and end tidal-CO₂
- Obtain, interpret and react appropriately to blood gas results and blood pressure measurements across a range of emergency presentations in all paediatric age groups
- Understand the prognostic factors for outcome of cardiac resuscitation
- Understand the indications and procedures for transport to a definitive facility following stabilization
- Understand the epidemiology of poisoning and be able to identify the major types of ingestions by age

- Understand and recognize the specific signs and symptoms of poisoning with a range of toxic agents
- Understand the appropriate sequence of investigations in the poisoned child
- Understand the role of antidotes in specific ingestions
- Understand the pharmacology and the treatment of common poisonings
- Understand how to manage the adolescent refusing treatment for a life threatening overdose
- Have the knowledge and skills to be able to assess and manage patients presenting with near-drowning and drowning.
- Understand the key signs of potential life-threatening injury associated with near-drowning and the sequence of appearance of these signs
- Be able to recognize the major types and signs and symptoms of potential life-threatening electrical injuries
- Understand the signs, symptoms and management of life-threatening hyper and hypothermia in children
- Understand the likely types of injury following a fall from a height and a road traffic accident
- Understand and apply the principles of acute trauma life support/advanced paediatric life support
- Be familiar with commonly used equipment, e.g. Cervical immobilization, fluid warmer, body warmer, splintage
- Be aware of the indications for intubation and able to perform the procedure recognizing potential complications
- Be able to distinguish and manage the causes of shock in the trauma patient
- Understand blood product administration in management

- Be able to request and interpret laboratory investigations and x-rays appropriately
- Be aware of child protection and accident prevention issues
- Have developed a sensitivity and understanding regarding the management of chronic end-stage conditions
- Understand the appropriate management of sudden death in infancy and the local management guidelines for supporting the family

Common Clinical Disorders:

- 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

4. Paediatric Genetics:

Common Clinical Disorders:

- Principles of inheritance
- Pedigree drawing
- Chromosomal disorders
- Single gene disorders
- Multifactorial/polygenic disorders
- Genetic diagnosis and prenatal diagnosis.

5. Community and Social Pediatrics:

- National health programs related to child health
- National health nutrition programs
- Nutrition screening of community
- Prevention of blindness
- School health programs
- Child abuse and neglect
- Disability and rehabilitation
- Prevention of sexually transmitted diseases
- Contraception
- Health legislation
- 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

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 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
- Capnography and end tidal CO₂ recording
- 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
- Saphenous vein cut down
- Common dressings
- Abscess drainage and basic principles of rehabilitation.

Acute Life Support/Resuscitation procedures

- Manual airway clearance manoeuvres
- Airway insertion
- Orotracheal and nasotracheal intubation
- Mechanical ventilation
- Use of continuous positive airways pressure
- Replacement of tracheostomy tube
- Cricothyrotomy and percutaneous transtracheal ventilation
- Needle thoracentesis
- Tube thoracotomy
- Direct current electrical cardioversion defibrillation

- External cardiac pacing
- Pericardiocentesis

Investigative Skills:

- Lumbar puncture
- Ventricular tap
- Bone marrow aspiration
- Pleural, peritoneal, pericardial and subdural tap
- Biopsy of liver and kidney
- Collection of urine for culture
- Urethral catheterization
- Supra-pubic aspiration.

Gastrointestinal Procedures

- Oronasogastric tube replacement
- Gastrostomy tube replacement
- Gastric lavage

Neurological Procedures

- Lumbar puncture
- Ventriculo peritoneal shunt tap (VP)

Ophthalmic Procedures

- Conjunctival irrigation
- Contact lens removal
- Eversion of eyelids

Pain Relief and Sedation

- Pain scoring
- Nonpharmacologic 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 (basic)
- ABG findings
- CT scan.
- Common EEG patterns
- Audiograms
- Ultrasonographic abnormalities and isotope studies.

2. 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.
- Composition of protoplasm, division into cytoplasm and nucleus.
- Role of macromolecules in the structural organization of the cell.
- 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.
- The cell cycle and cell division.
- Energy balance, metabolism & nutrition
- Uses of cell and tissue cultures.
- DNA and RNA structure and protein synthesis.

Blood:

- General properties and composition.
- Structure, production, functions and fate of red blood cells, white blood cells and platelets.
- Structure, formation, functions, and fate of haemoglobin.
- Blood volume and principles of its measurement.
- Disorders of 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:

- Cardiac muscle: electrical and mechanical properties.
- Metabolism
- Origin of the Heart beat, the electrical activity of the heart (normal and findings in cardiac and systemic diseases)
- 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.
- Cardiac output, amount, distribution, measurement, control, cardiac index and cardiac reserve.
- 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.
- Dynamics of blood and lymph flow: biophysics
- Arterial and arteriolar circulation, capillary circulation, lymphatic circulation and venous circulation
- Laws of haemodynamics governing flow, pressure and resistance in blood vessels.
- Arterial blood pressure, measurement and regulation.
- Vasomotor system and control of blood vessels.
- Characters of arterial pulse and venous pulse.
- Significance of central venous pressure.

- Mechanism of haemorrhage and shock.
- Coronary, cutaneous, splanchnic and peripheral circulation. Its measurement, control and special features, circulatory changes during muscular exercise
- Cardiovascular regulatory mechanisms local regulation
- Endothelium; systemic regulation by hormones and systemic regulation by nervous system.
- 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.
- Regulation of respiration. (chemical and neural)
- 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
- a. Renal
- b. Cardiac
- c. Gastrointestinal
- d. Trauma
- Mechanisms of homeostasis
- 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. Homeostatic mechanisms to maintain
 - a. Tonicity
 - b. Volume
 - c. H⁺ concentration of Extra cellular fluid.

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.
- Comprehensive knowledge of all hormones including their chemistry, biosynthesis, storage, release, transport, mechanism of inactivation mode and site of action, distribution, physiological and pathological activities and assessment of functions.
- Calcium homeostasis
- 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.
- Endocrine function of the kidney, heart, lung and gastrointestinal tract

Gastrointestinal function:

- Digestion and absorption
- Regulation of gastrointestinal function
- Motility: mastication, swallowing, gastric motility, intestinal motility and gall bladder motility.
- Secretary activity: formation, composition, function and control of saliva, gastric, pancreatic, bile and intestinal secretions.
- GIT hormones controlling activities: Functions of the stomach, pancreas, gall bladder, liver and large intestine. Formation and composition of faeces, mechanism of defecation.
- Circulation of bile. Principles and assessment of liver function tests.

- Interpretation of data, diagnostic tests. . Hyperbilirubinaemia and congenital hyperbilirubinaemias. . Control of hunger, appetite and its disorders.

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 extracorticospinal 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.
- Membrane biochemistry and signal transduction
- Gene expression and the synthesis of proteins
- Bioenergetics; fuel oxidation and the generation of ATP
- Enzymes and biologic catalysis
- Tissue metabolism

Vitamins

- Classification, components, sources, absorption and functions (physiological and biochemical role).
- 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.

Metabolism

- Metabolic rate and basal metabolic rate
- Factors influencing metabolic rate, principles of measurement.

Carbohydrates

- Classification and dietary sources.
- Digestion, absorption and utilization of dietary carbohydrates. Glucose tolerance test.
- Glycogenesis, glycolysis, gluconeogenesis, glycogenolysis, processes with the steps involved and effects of hormones.
- Citric acid cycle, steps involved, its significance and the common final metabolic pathway.
- Hexose monophosphate shunt: mechanism and significance.

Lipids

- Classification of simple, derived and compound lipids.
- Dietary sources.
- 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

- Classification and dietary sources of proteins.
- Digestion, absorption, utilization and control.

- Fate of amino acids.
- Urea formation with steps involved.
- Functions and effects of deficiency.

Nucleoproteins:

- Structure and metabolism.

Pigment Metabolism

- Basic concept of endogenous and exogenous pigments.
- Causes of pigmentation and depigmentation.
- Disorders of pigment metabolism, inherited disorders, acquired disorders from deficiency or excess of vitamins, minerals, fats, carbohydrates, proteins etc.

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
- Biotechnology and concepts of molecular biology with special emphasis on use of recombinant DNA techniques in medicine and the molecular biology of cancer

3. Pharmacology

- The Evolution of Medical Drugs
- British Pharmacopia
- Introduction to Pharmacology.
- Receptors
- Mechanisms of Drug Action
- Pharmacokinetics
- Pharmacokinetic Process
- a. Absorption
- b. Distribution
- c. Metabolism
- d. Desired Plasma Concentration
- e. Volume of Distribution
- f. Elimination
- g. Elimination rate constant and half life
- h. Creatinine Clearance
- Drug Effect
- a. Beneficial Responses
- b. Harmful Responses
- c. Allergic 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

4. Pathology

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

Cell Injury and adaptation

- Reversible and Irreversible Injury
- Fatty change, Pathologic calcification
- Necrosis and Gangrene
- Cellular adaptation
- Atrophy, Hypertrophy,
- Hyperplasia, Metaplasia, Aplasia

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

Neoplasia

- Dysplasia and Neoplasia
- Benign and malignant neoplasms
- Etiological factors for neoplasia
- Different modes of metastasis
- Tumor staging system and tumor grade

Immunity and Hypersensitivity

- Immunity
- Immune response
- Diagnostic procedures in a clinical Immunology laboratory
- Protective immunity to microbial diseases
- Tumour immunology
- Immunological tolerance, autoimmunity and autoimmune diseases.

- Transplantation immunology
- 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.
- Culture media for common pathogens and methods of culture.
- Special culture media. Basis of sensitivity tests.

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

Sterilization and disinfection

Immunization

Nosocomial infections

Use of investigation and procedures in laboratory

Sputum, urine, stool, cerebrospinal fluid (CSF), pus, aspirates etc.

CONTENT OUTLINE

For Final Examination in MD Paediatrics

1. Developmental Paediatrics:

- Principles of growth and development
- Normal growth and development in childhood and adolescence
- Deviations in growth and development
- Sexual maturation and its disturbances
- Failure to thrive and short stature.

Approach to Common Clinical Presentations:

- Short stature
- Obesity
- Precocious and delayed puberty
- Developmental delay
- Impaired learning

2. Neonatology:

- Have the knowledge and skills to be able to assess and manage neonates
- Be able to formulate a differential diagnosis for a variety of common presenting symptoms
- Understand the life-threatening nature of some of the situations and the need to call for help

Be able to lead a resuscitation team

- Understand the pathophysiological processes leading to neonatal cardio pulmonary instability, including the role of thermoregulation
- Understand and recognize the signs and symptoms of neonatal distress
- Be able to select and interpret appropriate investigations and explain results to parents
- Be able to identify neonates requiring admission, requiring a midwife or health visitor input and identify mothers requiring additional support
- Perinatal care and Understanding of perinatal medicine
- Normal newborn care in the labor room and resuscitation
- Newborn feeding

Common Clinical Disorders:

- Low birth weight
- Pre-maturity
- Common transient phenomena
- Respiratory distress
- Apnea
- Infections
- Jaundice

- Anemia and bleeding disorders
- Neurologic disorders
- Gastrointestinal disorders
- Renal disorders
- Malformations
- Thermoregulation and its disorders

Approach to

- Normal newborn
- Low birth weight newborn
- Breathless newborn
- Newborn with jaundice
- Newborn with fits

3. Paediatric Cardiology:

- Have the knowledge and skills to be able to assess and manage babies and children presenting to with cardiological disorders · Be able to formulate a differential diagnosis · Understand the life-threatening nature of some of these conditions and when to ask for the help of a cardiologist or others with more specialized expertise Paediatrics
- Understand and recognize the possible cardiac complications of other system disorders
- Be able to select and interpret appropriate cardiological investigations including ECGs at all ages and know the indications for echocardiography
- Understand the pharmacology, indications, side-effects and complications of cardiac drugs used commonly in the emergency department
- Understand when referral for specialist paediatric cardiology assessment for further management is appropriate

Common Clinical Disorders:

- Congenital heart diseases (cyanotic and acyanotic)
- Rheumatic fever
- Rheumatic heart disease
- Infective endocarditis
- Arrhythmia
- Diseases of myocardium (cardio-myopathy, myocarditis)
- Diseases of pericardium
- Systemic hypertension
- Hyperlipidemia in children.

Approach to Common Clinical Presentations:

- Murmur
- Cyanosis and cyanotic spells
- Edema and Congestive heart failure
- Tachycardia
- Palpitations
- Systemic hypertension
- Arrhythmia
- Shock
- Syncope
- Pulmonary hypertension
- Chest pain

4. Paediatric Pulmonology:

- Be able to institute appropriate acute airways management
- Be able to recognize patients with life-threatening asthma who may require ventilation
- Understand the indications and complications of drugs used in intubating severely asthmatic patients
- Understand the infective, allergic and obstructive causes of this condition · Be able to recognize pneumothorax and understand the diseases or circumstances predisposing to pneumothorax
- Understand the epidemiology and common presentations of bronchiolitis
- Be able to prioritize and interpret investigations and treatment
- Be able to formulate a differential diagnosis
- Be able to recognize other conditions with similar presentations including cardiac causes
- Understand the principles of management of community-acquired pneumonia according to local antimicrobial resistance

Common Clinical Disorders:

- Congenital and acquired disorders of nose
- Infections of upper respiratory tract, tonsils and adenoids
- Obstructive sleep apnea
- Congenital anomalies of lower respiratory tract
- Acute inflammatory upper airway obstruction
- Foreign body in larynx, trachea and bronchi
- Subglottic stenosis (acute and chronic)

- Trauma to larynx
- Neoplasm of larynx and trachea
- Bronchitis
- Bronchiolitis
- Aspiration pneumonia
- GER
- Acute pneumonia
- Recurrent and interstitial pneumonia
- Suppurative lung disease
- Atelectasis
- Lung cysts
- Emphysema and hyper-inflation
- Bronchial asthma
- Pulmonary edema
- Bronchiectasis
- Pleural effusion
- Pulmonary leaks
- Mediastinal mass.

Approach to Common Clinical Presentations:

- Cough/chronic cough
- Noisy breathing"
- Wheezy child

- Stridor, hoarseness
- Respiratory distress
- Pneumothorax
- Hemoptysis
- Chest pain
- Dyspnea
- Excessive daytime sleepiness
- Febrile patient with infiltrate
- Bronchiolitis
- Pleural effusion, pleurisy

5. Paediatric Gastroenterology & Hepatology:

- Have the understanding and skills to be able to assess and manage children presenting with gastrointestinal disorders
- Be able to formulate a differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible gastrointestinal complications of other system disorders
- Be able to select and interpret appropriate investigations as well as understand the role of interventional procedures like endoscopies in the investigation of acutely unwell patients
- Understand when to refer for specialist gastroenterological opinion
- Be able to provide appropriate monitoring including measurement of central venous pressure if required

Common Clinical Disorders:

- Diseases of mouth, oral cavity and tongue
- Disorders of deglutition and esophagus
- Peptic ulcer disease
- H. Pylori infection
- Foreign body
- Congenital pyloric stenosis
- Intestinal obstruction
- Malabsorption syndrome
- Acute and chronic diarrhea

- Irritable bowel syndrome
- Ulcerative colitis
- Hirschprung's disease
- Anorectal malformations
- Liver disorders
- Hepatitis
- Hepatic failure
- Chronic liver disease
- Wilson's disease
- Budd-Chiari syndrome
- Metabolic diseases of liver
- Cirrhosis and portal hypertension

Approach to Common Clinical Presentations:

- Acute, persistent and chronic diarrhea
- Abdominal pain and distension
- Nausea, vomiting
- Anorexia, weight loss
- Excess intestinal gas
- Fecal incontinence
- Constipation
- Anorectal discomfort, bleeding, or pruritus
- Food intolerance Gastrointestinal bleeding

- Iron-deficiency anemia
- Malnutrition
- Jaundice
- Hepato-splenomegaly and chronic liver disease
- Hepatic failure and encephalopathy Abdominal distention
- Abnormal liver function test
- Ascites
- Noncardiac chest pain
- Swallowing dysfunction

6. Paediatric Nephrology:

- Have the knowledge and skills to be able to assess and manage children presenting with renal/urinary problems.
- Have the knowledge and understanding of fluid and electrolyte imbalances and blood pressure in children with kidney problems
- Understand the life-threatening nature of some of these conditions
- Be able to perform an accurate assessment and management of fluid status
- Be able to select and interpret appropriate renal investigations including urine microbiology and renal function tests
- Understand when referral for specialist paediatric nephrology, general surgical or urological assessment is appropriate

Common Clinical Disorders:

- Acute and chronic glomerulonephritis
- Nephrotic syndrome
- Hemolytic uremic syndrome
- Urinary tract infection
- VUR and renal scarring
- Renal involvement in systemic diseases
- Renal tubular disorders
- Con-genital and hereditary renal disorders
- Renal and bladder stones
- Posterior urethral valves

- Hydronephrosis
- Voiding dysfunction
- Enuresis
- Undescended testis
- Wilm's tumor
- Fluid-electrolyte disturbances.

Approach to Common Clinical Presentations:

- Hematuria/dysuria
- Abnormalities noted on urinalysis (including proteinuria, hematuria, bacteriuria, pyuria and cylinduria)
- Complaints referable to bladder outlet (urgency, hesitancy)
- Dysuria
- Edema
- Flank or suprapubic pain or tenderness
- Hematuria (gross)
- Hypertension
- Incontinence
- Presenting features of uremia
- Renal colic
- Renal mass or bruit
- Inguinoscrotal swelling
- Renal failure (acute and chronic).

7. Paediatric Neurology:

- Have the knowledge and skills to be able to assess and manage children presenting with neurological disorders
- Be able to perform a developmental assessment appropriate to the Emergency department setting
- Understand and use a range of communication skills with disabled children, their families and other professionals
- Be able to formulate a differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible neurological complications of other system disorders
- Be able to select and interpret appropriate neurological investigations with major abnormalities including EEG and head CT scans
- Understand when referral for specialist neurological opinion is appropriate

Common Clinical Disorders:

- Seizure and non seizure paroxysmal events
- Epilepsy and epileptic syndromes of childhood
- Meningitis
- Brain abscess
- Coma
- Acute encephalitis
- Febrile encephalopathies

- Guillain-Barre syndrome
- Neurocysticercosis and other neuro-infestations
- HIV encephalopathy
- SSPE
- Cerebral palsy
- Neurometabolic disorders
- Mental retardation
- Learning disabilities
- Muscular dystrophies
- Acute flaccid paralysis and surveillance
- Ataxia
- Movement disorders of child-hood
- CNS tumors
- CNS malformations.

Approach to Common Clinical Presentations:

- Limping child
- Convulsions
- Abnormality of gait
- Abnormal speech
- Abnormal vision
- Altered sensation
- Confusion

- Disturbed coordination
- Dizziness, vertigo
- Headache
- Hearing loss
- Localized pain syndromes: Facial pain
- Loss of consciousness; coma
- Memory impairment
- Seizure
- Sleep disorder
- Tremors
- Weakness/paresis (generalized, localized)
- Intracranial space occupying lesion Paraplegia
- Quadriplegia
- Large head
- Small head
- Floppy infant
- Acute flaccid paralysis
- Cerebral palsy and other neuromotor disability

8. Paediatric Hematology and Oncology:

- Have the knowledge and skills to be able to assess and manage children presenting with haematological and oncological disorders
- Be able to formulate a likely differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible haematological and oncological complications of other system disorders
- Understand the normal age-dependent haematological blood values
- Understand the indications, contra indications and complications of the use of blood products
- Understand about national and local blood transfusion policies
- Understand the legal process if faced with parental objection to the use of blood products
- Understand when referral for specialist paediatric haematological or oncological assessment is appropriate

Common Clinical Disorders:

- Deficiency anemias
- Hemolytic anemias
- Aplastic anemias
- Pancytopenia
- Disorders of hemostasis
- Thrombocytopenia
- Blood component therapy
- Transfusion related infections

- Bone marrow transplant/ stem cell transplant
- Acute and chronic leukemia
- Myelodysplastic syndrome
- Hodgkin disease
- Non-Hodgkin's lymphoma
- Neuroblastoma
- Hyper-coagulable states

Approach to Common Clinical Presentations:

- Abnormalities of peripheral smear
- Bleeding, bruising, or petechiae
- Family history of anemia or bleeding disorder
- Lymphadenopathy
- Pallor or fatigue
- Recurrent infections or fever/neutropenia
- Splenomegaly
- Venous or arterial thrombosis, including recurrent thrombosis

9. Paediatric Endocrinology:

- Have the understanding and skills to be able to assess and manage children presenting with endocrine or metabolic disorders
 - Be able to formulate a differential diagnosis
 - Understand the life-threatening nature of some of these conditions
 - Understand and recognize the possible metabolic and endocrine complications of other system disorders
 - Be able to select and interpret appropriate endocrine and metabolic investigations
 - Be able to measure children accurately and assess their growth using appropriate growth charts, taking into account parental stature and pubertal status
 - Be able to assess pubertal stages of development accurately
 - Understand when and how to perform endocrine and metabolic investigations in neonates and children
 - Understand about the biochemical findings in children presenting with metabolic disease
- Recognize and be able to manage clinical and biochemical features of electrolyte and acid base abnormalities

Common Clinical Disorders:

- Hypopituitarism/hyperpituitarism
- Diabetes insipidus
- Pubertal disorders
- Hypo- and hyperthyroidism
- Hypo- and hyperparathyroidism

- Adrenal insufficiency
- Cushing's syndrome
- Adrenogenital syndromes
- Diabetes mellitus
- Hypoglycemia
- Short stature
- Failure to thrive
- Gonadal dysfunction and intersexuality
- Pubertal changes and gynecological disorders.

Approach to Common Clinical Presentations:

- Thyroid swelling
- Goiter (diffuse, nodular)
- Ambiguous genitalia
- Asthenia
- Diarrhea
- Disorders of pigmentation
- Hirsutism
- Hypertension refractory to primary therapy
- Hypotension
- Incidentally discovered abnormalities in serum electrolytes, calcium, phosphate, or glucose
- Mental status changes
- Osteopenia

- Polyuria, polydipsia
- Signs and symptoms of osteopenia
- Symptoms of hyper- and hypoglycemia
- Symptoms of hypermetabolism and hypometabolism
- Urinary tract stone
- Weight gain, obesity
- Short stature

10. Paediatric Immunology and Rheumatology:

- Understand the pathophysiology and principles of treatment of allergic and autoimmune disorders
- Understand the prevention, diagnosis, and management of crystalline diseases, systemic rheumatic diseases, spondyloarthropathies, vasculitis, inflammatory muscle disease, rickets, recreational and sports injury and soft-tissue diseases and trauma.
- The goal is early diagnosis and treatment of these conditions as well as management of acute arthritis and musculoskeletal disorders and in the long-term care of systemic disorders to prevent disability and death.
- Understand the likely types of soft tissue and bony injuries for each age group
- Be able to judge if these relate correctly to the stated mechanism of injury
- Be aware of rheumatological, infectious, malignant and non-accidental causes of musculoskeletal presentations
- Be able to examine a child in a way which localizes the injury
- Be able to manage and score pain appropriately
- Be able to request and interpret x-rays appropriately
- Understand the Salter-Harris classification of epiphyseal injuries
- Understand when referral to physiotherapy would be of benefit
- Understand the likely time-frame for recovery in children
- Be able to arrange appropriate follow-up at a sensible time
- Resident must also be proficient in monitoring the effects of anti inflammatory, immunosuppressive, and cytotoxic drugs

Common Clinical Disorders:

- Arthritis (acute and chronic)
- Major congenital orthopedic deformities
- Bone and joint infections; Pyogenic, tubercular
- Common bone tumors.
- Connective tissue disorders
- Disorders of immunoglobulins
- T and B cell disorders
- Immunodeficiency syndromes.

Approach to Common Clinical Presentations:

- Arthritis
- Joint pain and/or swelling (acute or chronic, monoarticular or polyarticular)
- Non-traumatic back pain in children
- Muscle aches (localized or diffuse)
- Musculoskeletal weakness
- Nonarticular signs and symptoms of rheumatologic disease, Raynaud's phenomenon and skin rash
- Regional pain of the neck, shoulder, lower back, hip, knee, wrists hands, or
- Traumatic joint
- Multiple congenital anomalies

11. Paediatric Otolaryngology:

- Have the understanding and skills to be able to assess and manage children presenting with ENT problems
- Be able to formulate a differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible respiratory complications of other system disorders
- Be able to select and interpret appropriate respiratory investigations including arterial blood gases, chest x- rays and peak flow measurements
- Understand when referral for specialist paediatric respiratory assessment is appropriate

Common Clinical Disorders:

- Acute and chronic otitis media
- Conductive/sensorineural hearing loss
- Post-diphtheritic palatal palsy
- Acute/chronic tonsillitis/adenoids
- Allergic rhinitis/sinusitis
- Foreign body.

Approach to Common Clinical Presentations:

- Traumatic ear conditions
- Earache or discharge
- Hearing loss
- Epistaxis

- Nasal trauma
- Acute tonsillitis and pharyngitis
- Airway obstruction
- Dental conditions
- Referred otalgia

12. Paediatric Dermatology:

- Have the knowledge and skills to be able to assess and manage children presenting with dermatological disorders
- Be able to describe accurately any rash
- Be able to formulate a differential diagnosis
- Recognize and manage the serious as well as the life-threatening complications of some of these conditions
- Understand and recognize the possible dermatological manifestations and complications of other system disorders
- Understand when referral for specialist dermatological opinion is appropriate
- Understand the principles of therapy for skin complaints

Common Clinical Disorders:

- Exanthematous illnesses
- Vascular lesions
- Pigment disorders
- Vesicobullous disorders
- Pyogenic, fungal and parasitic infections
- Steven-Johnson syndrome
- Eczema
- Seborrheic dermatitis
- Drug rash
- Urticaria
- Alopecia
- Ichthyosis

13. Paediatric Ophthalmology:

- Have the knowledge and skills to be able to assess and manage children presenting with ophthalmological problems
- Be able to select and interpret appropriate ophthalmological investigations including Snellen charts and visual field examinations
- Understand when referral for specialist paediatric ophthalmological assessment is appropriate

Common Clinical Disorders:

- Errors of refraction and accommodation
- Astigmatism
- Partial/total loss of vision
- Nystagmus
- Cataract
- Night blindness
- Chorio-retinitis
- Strabismus
- Conjunctival and corneal disorders
- Retinopathy of pre-maturity
- Retinoblastoma
- Optic atrophy
- Papilledema.

Approach to Common Clinical Presentations:

- Refractory errors
- Blindness
- Redness
- Eye discharge
- Conjunctivitis
- Squint
- Proptosis

14. Child and Adolescent Psychiatry:

- Understand normal behaviour patterns including response to injury and illness from birth to adolescence
- Understand the signs and symptoms that indicate serious conditions such as depression and psychosis
- Understand about attachment and conduct disorders
- Be able to recognize abnormal child behaviour patterns
- Understand the influence of physical, emotional and social factors on development and health
- Understand about excessive crying and resources available to help families
- Understand about the roles of other professions, agencies and the voluntary sector
- Understand the emotional impact of hospitalization on children
- Understand the behaviour aspects of eating disorders
- Be able to recognize fabricated illness and injury in children
- Understand adolescent behaviour in maturation
- Be able to recognize, support and manage patients presenting with self harm
- Understand about the multi-disciplinary nature of child and adolescent mental health services

Common Clinical Disorders:

- Rumination
- Pica, enuresis
- Encopresis
- Sleep disorders
- Habit disorders

- Breath holding spells
- Anxiety disorders
- Mood disorders
- Temper tantrums
- Attention deficit
- Hyperactivity disorder
- Infantile autism

Approach to Common Clinical Presentations:

- Self harm
- Habit disorders
- Hyperactivity and attention deficit
- Expression of distress
- Unnecessary shouting, crying
- Abnormally under reacting
- Apnoeic episodes
- Presentation of imposed airway obstruction

CURRICULUM FOR FIRST YEAR

RESPIRATORY SYSTEM

- Embryology of respiratory system and its malformations (cleft palate, tracheoesophageal fistula, diaphragmatic hernia, choanal atresia)
- Pulmonary ventilation and its mechanics
- Control of ventilation
- Respiratory insufficiency
- Principles of gas exchange
- Pulmonary function test
- Pneumonia
- Asthma
- Infections of upper and lower respiratory system
- Pharmacokinetics and dynamics of drugs used in respiratory diseases
- Pathophysiology of important infections related to the system

Learning Objectives

- Describe anatomy of respiratory passages and lungs
- Demonstrate the common congenital malformations and their effects
- Explain the control of ventilation
- Interpret pulmonary functions tests and principles of gas exchange
- Demonstrate pathophysiology of asthma

- Describe the pathological changes involved in upper respiratory tract infection and pneumonia.
- Define the pharmacokinetics and pharmacodynamics and effects of drugs used in respiratory medicines
- Describe the pathophysiology of common bacterial and viral diseases like pneumonia, bronchiolitis, croup, diphtheria, pertusis and pleural effusion leading to empyema

CARDIOVASCULAR SYSTEM

- Embryology of heart and great vessels and their common malformation.
- Fetal circulation and its
- changes after birth
- Cardiac cycle
- Conduction system of heart and its defects (SVT, VT, AF,)
- Heart Failure
- Hypertension
- Effects of electrolyte disturbances on cardiac cycle
- Pathophysiology of important infections related to the system

Learning Objectives

- Demonstrate the development of heart and its common malformations like VSD, ASD, PDA, TOF, TGA and Coarctation of Aorta.
- Define the anatomy of heart and relation of various cardiac chambers to each other
- Identify the arrangement of conduction system of heart
- Demonstrate fetal circulation and its changes after birth
- Explain the cardiac cycle and its conduction defects
- Describe the pathophysiology of heart failure and hypertension
- Detect affects of electrolytes disturbances on cardiac cycle
- Distinguish the abnormalities of cardiac rhythm
- Understand dynamics and effects of various drugs used in cardiovascular medicines
- Describe the pathophysiology of common bacterial and viral diseases like bacterial endocarditis, rheumatic carditis and pericarditis

BLOOD

- Composition of blood
- Hematological values during infancy and childhood
- Variation of hemoglobin composition at various ages
- Common causes of anemia (nutritional and hemolytic)
- Hemostasis and clotting cascade
- Tests regarding hemoglobinopathies and clotting profile
- Pathophysiology of different anemias.
- Pathophysiology of coagulation disorders
- Pathophysiology of important infections related to the system

Learning Objectives

- Identify the hematological values during infancy and childhood
- Enlist common causes of anemia
- Interpret tests regarding hemoglobinopathies and clotting profile
- Define pathophysiology of different anemias like hemolytic, nutritional and aplastic anemias
- Demonstrate hemostasis and clotting cascade
- Understand dynamics and effects of various drugs used in haematological diseases
- Describe the pathophysiology of common bacterial and viral diseases like malaria, dengue fever, viral hemorrhagic fever, septicemia and septic shock

CNS

- CNS Malformation
- Blood supply of brain
- Gross anatomy of brain and spinal cord
- CSF production and circulation
- Origin course and functions of cranial nerve
- Functions of different lobes of brain
- Functions of spinal cord and neuromuscular junctions
- Pathophysiology of seizures
- Pathophysiology of thrombosis and stroke
- Tumors of the brain
- Antiepileptic drugs
- Pathophysiology of important infections related to the system

Learning Objectives

- Describe the anatomy and blood supply of brain
- Recognize the origin and course of cranial nerves
- Identify the malformations like meningomyelocele, hydrocephalus and neural tube malformation
- Recognize functions of different lobes of brain and cranial nerves
- Explain the functions of spinal cord
- Interpret the various tests related to nerve conduction and muscular functions
- Describe the mechanism of seizures

- Identify the effects of thrombosis in the central nervous system
- Enlist the presentation of brain tumors
- Understand dynamics and effects of various drugs used to control seizures and their interactions
- Describe the pathophysiology of common bacterial and viral diseases like meningitis, encephalitis, polio, tetanus, GBS, transverse myelitis and brain abscess

ENDOCRINOLOGY

- Embryology
- and malformation of Pituitary,
- Thyroid, Parathyroid, Adrenal gland,
- Hormones and their function
- Growth hormone production and effects
- Thyroxin synthesis and functions
- Parathyroid hormone functions
- Physiology of puberty
- Development and functions of gonads
- Calcium homeostasis
- Pathophysiology of important infections related to the system

Learning Objectives

- Demonstrate the development and malformations of pituitary, thyroid, parathyroid and adrenal gland.
- Describe the synthesis and functions of hormones of pituitary, thyroid, parathyroid and adrenal gland.
- Describe pituitary hormones and their functions.
- Enlist the effects of various hormones in relation to development and puberty
- Enlist the effects of deficiency and over production of various hormones
- Understand dynamics and effects of various drugs used to treat endocrinal diseases like hypothyroidism, diabetes, hypoparathyroidism and disorders of sexual differentiation
- Describe the pathophysiology of common bacterial and viral diseases like pancreatitis and adrenal hemorrhage as in meningococemia

GIT

- Development of Gastrointestinal system and its malformations
- Location of viscera and their blood supply
- Digestion, absorption and motility
- Functions of liver
- Pancreatic hormones and their functions
- Role of micronutrients and macronutrients
- Development of ascities and portal hypertension
- Pathophysiology of important infections related to the system

Learning Objectives

- Demonstrate and identify esophageal atresia, tracheoesophageal fistula, intestinal atresia / malrotation, Hirschsprung's disease and imperforate anus
- Describe the blood supply of various viscera
- Explain the role of various factors involved in digestion and absorption
- Enlist various causes of jaundice
- Recognize the effects of deficiency of macronutrients and micronutrients like rickets, kwashiorkor, marasmus, effects of malabsorption of fat and sugars
- Distinguish various causes leading to ascities and portal hypertension
- Describe pathophysiology ascities and portal hypertension.
- Understand pharmacokinetics, pharmacodynamics of various drugs used to treat abnormalities of digestion, absorption and motility
- Describe the pathophysiology of common bacterial and viral diseases like acute gastroenteritis, giardiasis, amoebiasis, shigellosis, cholera, typhoid fever, hepatitis and liver abscess and worm infestations

GENITOURINARY SYSTEM

- Development of genitourinary system and its malformations
- Anatomic details of glomerular and tubular arrangements, kidney ureters, bladder and urethra
- Glomerular and tubular functions
- Fluid and electrolyte homeostasis
- Acid-base balance
- Renal functions
- Proteinuria and pathophysiology of oedema
- Pathophysiology of vesicoureteric reflux
- Pathophysiology of important infections related to the system

Learning Objectives

- Recognize features associated with developmental anomalies of genitourinary system
- Describe the anatomy of genitourinary system
- Interpret various renal function tests
- Explain mechanism of homeostasis
- Enlist various causes of proteinuria and changes in homeostasis as a result of edema
- Distinguish between glomerular and tubular causes of proteinuria
- Describe the pathophysiology of common bacterial and viral diseases like UTI, post streptococcal glomerulonephritis and perinephric abscess

NEONATOLOGY

- Low birth weight
- Pre-maturity
- Common transient phenomena
- Respiratory distress
- Apnea
- Infections
- Jaundice
- Anemia and bleeding disorders
- Neurologic disorders
- Gastrointestinal disorders
- Renal disorders
- Malformations

Learning Objectives

- Have the knowledge and skills to be able to assess and manage neonates
- Be able to formulate a differential diagnosis for a variety of common presenting symptoms
- Understand the life-threatening nature of some of the situations and the need to call for help · Be able to lead a resuscitation team
- Understand the pathophysiological processes leading to neonatal cardio pulmonary instability, including the role of thermoregulation
- Understand and recognize the signs and symptoms of neonatal distress

- Be able to select and interpret appropriate investigations and explain results to parents
- Be Able to deal with
- Low birth weight newborn
- Breathless newborn
- Newborn with jaundice
- Newborn with fits

CURRICULUM FOR SECOND YEAR

NUTRITION:

- Common Clinical Disorders:
- Maternal nutritional disorders; Impact on fetal outcome
- Nutrition for the low birth weight
- Breast feeding
- Infant feeding including complementary feeding
- Protein energy malnutrition
- Vitamin and mineral deficiencies
- Trace elements of nutritional importance
- Obesity
- Adolescent nutrition
- Nutritional management in diarrhea
- Nutritional management of systemic illnesses (celiac disease, hepatobiliary disorders, nephrotic syndrome)
- Parenteral and enteral nutrition in neonates and children.

Learning Objectives

- Understand the following
- Lactation management and complementary feeding
- Protein energy malnutrition (underweight, wasting, stunting)
- Failure to thrive

PAEDIATRIC INFECTIOUS DISORDERS:

Common Clinical Disorders:

Principles and practices of infection control and isolation.

Common infectious diseases including their epidemiology, etiologic pathogens, pathogenesis, clinical manifestations, differential diagnosis, appropriate application and interpretation of diagnostic tests, treatment and prophylaxis for:

- a. Respiratory tract infections
- b. Central nervous system infections
- c. Cardiovascular infections
- d. Fungal disease
- e. Mycobacterial infections
- f. Approach to the Patient with a Parasitic Infection
- g. Malaria
- h. Soft tissue, bone, and joint infections
- i. Fevers of unknown origin
- j. Infections in immunocompromised hosts
- k. Gastrointestinal tract infections
- l. Genitourinary tract infections including sexually transmitted diseases.
- m. Infections of indwelling venous and arterial catheters and prosthetic devices
- n. Nosocomial infections, in intensive care and general care settings
- o. Animal and human bite wounds.
- p. HIV infection and its associated complications
- q. Travel-related infections, diagnosis, treatment, and prevention

r. Bioterrorism: identifying infections; understanding public health aspects.

Active Immunization against infectious diseases

Recommended immunization of infants, children and adolescents.

Basic principles of anti-infective therapy, including the use of antibacterial, antiviral, antifungal, anti-mycobacterial, and anti-parasitic agents with regard to mechanisms of action, spectra of activity, doses and regimens, drug interactions, mechanisms of resistance, appropriate clinical applications, and adverse effects/toxicities.

Acute onset pyrexia

- Prolonged pyrexia
- Septic shock
- Anaphylaxis
- Abdominal or pelvic pain
- Cellulitis
- Diarrhea
- Dysuria
- Facial or ear pain
- Fever, including fever in immunosuppressed patient
- Hepatitis
- Joint effusion
- Limb, sacral ulcers
- Lymphadenopathy
- Meningitis

Learning Objectives

- Have the knowledge and skills to be able to assess and manage children presenting with infectious diseases and conditions
- Be able to formulate a likely differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible infectious complications of other system disorders
- Be able to select and interpret appropriate laboratory investigations, including microbiology and virology cultures, and understand the significance of results pertaining to all age-groups
- Understand when referral for specialist infectious disease or allergy assessment is appropriate
- Understand the causes of vulnerability to infection
- Understand the classification of infectious agents
- Understand the epidemiology, pathology and 'natural history' of common infections of the newborn and children in Pakistan and the public health policies associated with them
- Understand the importance of common infections, for example TB, Malaria, Hepatitis C
- Be able to follow agreed national and local guidelines on the notification of infectious diseases
- Understand the rationale for prescribing common antimicrobials
- Understand the indications for antimicrobial prophylaxis

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

Learning Objectives

Be able to recognize the patient at risk for an obstructed airway

- Be able to recognize the patient in respiratory failure or arrest
- Be able to formulate a differential diagnosis by age of a patient with acute life threatening respiratory difficulty and prioritize management
- Understand the life-threatening nature of these problems and know when to call for help of more experienced colleagues
- Be able to lead a resuscitation team
- Be able to recognize the child in shock and formulate a differential diagnosis between compensated and uncompensated shock
- Understand the indications, pharmacology, contra indications, dose calculation and routes of administration of drugs used in resuscitation and in the stabilization of children in cardiac arrest or failure
- Be able to obtain venous and arterial access including IV & central lines
- Be able to ensure appropriate non-invasive and invasive monitoring including arterial and end tidal-CO₂
- Obtain, interpret and react appropriately to blood gas results and blood pressure measurements across a range of emergency presentations in all paediatric age groups
- Understand the prognostic factors for outcome of cardiac resuscitation
- Understand the indications and procedures for transport to a definitive facility following stabilization

- Understand the epidemiology of poisoning and be able to identify the major types of ingestions by age
- Understand and recognize the specific signs and symptoms of poisoning with a range of toxic agents
- Understand the appropriate sequence of investigations in the poisoned child
- Understand the role of antidotes in specific ingestions
- Understand the pharmacology and the treatment of common poisonings
- Understand how to manage the adolescent refusing treatment for a life threatening overdose
- Have the knowledge and skills to be able to assess and manage patients presenting with near-drowning and drowning.
- Understand the key signs of potential life-threatening injury associated with near-drowning and the sequence of appearance of these signs
- Be able to recognize the major types and signs and symptoms of potential life-threatening electrical injuries
- Understand the signs, symptoms and management of life-threatening hyper and hypothermia in children
- Understand the likely types of injury following a fall from a height and a road traffic accident
- Understand and apply the principles of acute trauma life support/advanced paediatric life support
- Be familiar with commonly used equipment, e.g. Cervical immobilization, fluid warmer, body warmer, splintage
- Be aware of the indications for intubation and able to perform the procedure recognizing potential complications

- Be able to distinguish and manage the causes of shock in the trauma patient
- Understand blood product administration in management
- Be able to request and interpret laboratory investigations and x-rays appropriately
- Be aware of child protection and accident prevention issues
- Have developed a sensitivity and understanding regarding the management of chronic end-stage conditions
- Understand the appropriate management of sudden death in infancy and the local management guidelines for supporting the family

PAEDIATRIC GENETICS:

Common Clinical Disorders:

- Principles of inheritance
- Pedigree drawing
- Chromosomal disorders
- Single gene disorders
- Multifactorial/polygenic disorders
- Genetic diagnosis and prenatal diagnosis.

Learning Objectives

Be able to draw the pedigree to calculate the risk in other siblings and future generation

COMMUNITY AND SOCIAL PEDIATRICS

National health programs related to child health

- National health nutrition programs
- Nutrition screening of community
- Prevention of blindness
- School health programs
- Child abuse and neglect
- Disability and rehabilitation
- Prevention of sexually transmitted diseases
- Contraception
- Health legislation
- 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

Learning Objectives

Be able to prevent diseases related with nutritional deficiencies

Be able to perform nutritional screening of community

Understand health legislation and national health program related to child health

CARDIOVASCULAR SYSTEM

Cardiac muscle: electrical and mechanical properties.

- Metabolism
- Origin of the Heart beat, the electrical activity of the heart (normal and findings in cardiac and systemic diseases)
- 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.
- Cardiac output, amount, distribution, measurement, control, cardiac index and cardiac reserve.
- 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.
- Dynamics of blood and lymph flow: biophysics
- Arterial and arteriolar circulation, capillary circulation, lymphatic circulation and venous circulation
- Laws of haemodynamics governing flow, pressure and resistance in blood vessels.
- Arterial blood pressure, measurement and regulation.
- Vasomotor system and control of blood vessels.
- Characters of arterial pulse and venous pulse.

- Significance of central venous pressure.
- Mechanism of haemorrhage and shock.
- Coronary, cutaneous, splanchnic and peripheral circulation. Its measurement, control and special features, circulatory changes during muscular exercise
- Cardiovascular regulatory mechanisms local regulation
- Endothelium; systemic regulation by hormones and systemic regulation by nervous system.
- Circulation through special organs: coronary circulation, cerebral circulation and pulmonary circulation

Learning Objectives

Be able to do:

- 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
- Saphenous vein cut down
- Manual airway clearance

- Airway insertion
- Orotracheal and nasotracheal intubation
- Mechanical ventilation
- Use of continuous positive airways pressure
- Cricothyrotomy and percutaneous transtracheal ventilation
- Direct current electrical cardioversion defibrillation
- External cardiac pacing
- Pericardiocentesis
- Interpretation of ECG abnormalities

PAEDIATRIC CARDIOLOGY

Common Clinical Disorders:

- Congenital heart diseases (cyanotic and acyanotic)
- Rheumatic fever
- Rheumatic heart disease
- Infective endocarditis
- Arrhythmia
- Diseases of myocardium (cardio-myopathy, myocarditis)
- Diseases of pericardium
- Systemic hypertension
- Hyperlipidemia in children.

Approach to Common Clinical Presentations:

- Murmur
- Cyanosis and cyanotic spells
- Edema and Congestive heart failure
- Tachycardia
- Palpitations
- Systemic hypertension
- Arrhythmia
- Shock
- Syncope

Learning Objectives

Have the knowledge and skills to be able to assess and manage babies and children presenting to with cardiological disorders · Be able to formulate a differential diagnosis · Understand the life-threatening nature of some of these conditions and when to ask for the help of a cardiologist or others with more specialized expertise Paediatrics

- Understand and recognize the possible cardiac complications of other system disorders
- Be able to select and interpret appropriate cardiological investigations including ECGs at all ages and know the indications for echocardiography
- Understand the pharmacology, indications, side-effects and complications of cardiac drugs used commonly in the emergency department
- Understand when referral for specialist paediatric cardiology assessment for further management is appropriate

CURRICULUM FOR THIRD YEAR

PAEDIATRIC PULMONOLOGY

Congenital and acquired disorders of nose

- Infections of upper respiratory tract, tonsils and adenoids
- Obstructive sleep apnea
- Congenital anomalies of lower respiratory tract
- Acute inflammatory upper airway obstruction
- Foreign body in larynx, trachea and bronchi
- Subglottic stenosis (acute and chronic)
- Trauma to larynx
- Neoplasm of larynx and trachea
- Bronchitis
- Bronchiolitis
- Aspiration pneumonia
- GER
- Acute pneumonia
- Recurrent and interstitial pneumonia
- Suppurative lung disease
- Atelectasis
- Lung cysts
- Emphysema and hyper-inflation

- Bronchial asthma
- Pulmonary edema
- Bronchiectasis
- Pleural effusion
- Pulmonary leaks
- Mediastinal mass.

Learning Objectives

Be able to institute appropriate acute airways management

- Be able to recognize patients with life-threatening asthma who may require ventilation
- Understand the indications and complications of drugs used in intubating severely asthmatic patients
- Understand the infective, allergic and obstructive causes of this condition · Be able to recognize pneumothorax and understand the diseases or circumstances predisposing to pneumothorax
- Understand the epidemiology and common presentations of bronchiolitis
- Be able to prioritize and interpret investigations and treatment
- Be able to formulate a differential diagnosis
- Be able to recognize other conditions with similar presentations including cardiac causes
- Understand the principles of management of community-acquired pneumonia according to local antimicrobial resistance

PAEDIATRIC GASTROENTEROLOGY & HEPATOLOGY

Diseases of mouth, oral cavity and tongue

- Disorders of deglutition and esophagus
- Peptic ulcer disease
- H. Pylori infection
- Foreign body
- Congenital pyloric stenosis
- Intestinal obstruction
- Malabsorption syndrome
- Acute and chronic diarrhea
- Irritable bowel syndrome
- Ulcerative colitis
- Hirschprung's disease
- Anorectal malformations
- Liver disorders
- Hepatitis
- Hepatic failure
- Chronic liver disease
- Wilson's disease
- Budd-Chiari syndrome
- Metabolic diseases of liver
- Cirrhosis and portal hypertension
- Fecal incontinence

- Constipation
- Anorectal discomfort, bleeding, or pruritus
- Food intolerance Gastrointestinal bleeding
- Iron-deficiency anemia
- Malnutrition
- Jaundice

Learning Objectives

Have the understanding and skills to be able to assess and manage children presenting with gastrointestinal disorders

- Be able to formulate a differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible gastrointestinal complications of other system disorders
- Be able to select and interpret appropriate investigations as well as understand the role of interventional procedures like endoscopies in the investigation of acutely unwell patients
- Understand when to refer for specialist gastroenterological opinion
- Be able to provide appropriate monitoring including measurement of central venous pressure if required

PAEDIATRIC NEPHROLOGY

Acute and chronic glomerulonephritis

- Nephrotic syndrome
- Hemolytic uremic syndrome
- Urinary tract infection
- VUR and renal scarring
- Renal involvement in systemic diseases
- Renal tubular disorders
- Con-genital and hereditary renal disorders
- Renal and bladder stones
- Posterior urethral valves
- Hydronephrosis
- Voiding dysfunction
- Enuresis
- Undescended testis
- Wilm's tumor
- Fluid-electrolyte disturbances.

Hematuria (gross)

- Hypertension
- Incontinence

Dysuria

- Edema

Renal failure (acute and chronic).

Learning Objectives

Have the knowledge and skills to be able to assess and manage children presenting with renal/urinary problems.

- Have the knowledge and understanding of fluid and electrolyte imbalances and blood pressure in children with kidney problems
- Understand the life-threatening nature of some of these conditions
- Be able to perform an accurate assessment and management of fluid status
- Be able to select and interpret appropriate renal investigations including urine microbiology and renal function tests
- Understand when referral for specialist paediatric nephrology, general surgical or urological assessment is appropriate

PAEDIATRIC NEUROLOGY:

Seizure and non seizure paroxysmal events

- Epilepsy and epileptic syndromes of childhood
- Meningitis
- Brain abscess
- Coma
- Acute encephalitis
- Febrile encephalopathies
- Guillain-Barre syndrome
- Neurocysticercosis and other neuro-infestations
- HIV encephalopathy
- SSPE
- Cerebral palsy
- Neurometabolic disorders
- Mental retardation
- Learning disabilities
- Muscular dystrophies
- Acute flaccid paralysis and surveillance
- Ataxia
- Movement disorders of child-hood
- CNS tumors
- CNS malformations.
- Limping child

- Convulsions
- Abnormality of gait
- Abnormal speech

Headache

Intracranial space occupying lesion Paraplegia

- Quadriplegia
- Large head
- Small head
- Floppy infant
- Acute flaccid paralysis
- Cerebral palsy and other neuromotor disability

Learning Objectives

- Have the knowledge and skills to be able to assess and manage children presenting with neurological disorders
- Be able to perform a developmental assessment appropriate to the Emergency department setting
- Understand and use a range of communication skills with disabled children, their families and other professionals
- Be able to formulate a differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible neurological complications of other system disorders

Be able to select and interpret appropriate neurological investigations with major abnormalities including EEG and head CT scans

Understand when referral for specialist neurological opinion is appropriate

PAEDIATRIC HEMATOLOGY AND ONCOLOGY:

Deficiency anemias

- Hemolytic anemias
- Aplastic anemias
- Pancytopenia
- Disorders of hemostasis
- Thrombocytopenia
- Blood component therapy
- Transfusion related infections
- Bone marrow transplant/ stem cell transplant
- Acute and chronic leukemia
- Myelodysplastic syndrome
- Hodgkin disease
- Non-Hodgkin's lymphoma
- Neuroblastoma
- Hyper-coagulable states

Bleeding, bruising, or petechiae

- Family history of anemia or bleeding disorder
- Lymphadenopathy

Learning Objectives

- Have the knowledge and skills to be able to assess and manage children presenting with haematological and oncological disorders
- Be able to formulate a likely differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible haematological and oncological complications of other system disorders
- Understand the normal age-dependent haematological blood values
- Understand the indications, contra indications and complications of the use of blood products
- Understand about national and local blood transfusion policies
- Understand the legal process if faced with parental objection to the use of blood products
- Understand when referral for specialist paediatric haematological or oncological assessment is appropriate

PAEDIATRIC ENDOCRINOLOGY:

- Hypopituitarism/hyperpituitarism
- Diabetes insipidus
- Pubertal disorders
- Hypo- and hyperthyroidism
- Hypo- and hyperparathyroidism
- Adrenal insufficiency
- Cushing's syndrome
- Adrenogenital syndromes
- Diabetes mellitus
- Hypoglycemia
- Short stature
- Failure to thrive
- Gonadal dysfunction and intersexuality
- Pubertal changes and gynecological disorders.
- Goiter (diffuse, nodular)
- Ambiguous genitalia
- Polyuria, polydipsia
- Weight gain, obesity

Learning Objectives

- Have the understanding and skills to be able to assess and manage children presenting with endocrine or metabolic disorders
 - Be able to formulate a differential diagnosis
 - Understand the life-threatening nature of some of these conditions
 - Understand and recognize the possible metabolic and endocrine complications of other system disorders
 - Be able to select and interpret appropriate endocrine and metabolic investigations
 - Be able to measure children accurately and assess their growth using appropriate growth charts, taking into account parental stature and pubertal status
 - Be able to assess pubertal stages of development accurately
 - Understand when and how to perform endocrine and metabolic investigations in neonates and children
 - Understand about the biochemical findings in children presenting with metabolic disease
- Recognize and be able to manage clinical and biochemical features of electrolyte and acid base abnormalities
- Understand the differential diagnosis of patients with ambiguous genitalia

CURRICULUM FOR FOURTH YEAR

PAEDIATRIC IMMUNOLOGY AND RHEUMATOLOGY:

- Arthritis (acute and chronic)
- Major congenital orthopedic deformities
- Bone and joint infections; Pyogenic, tubercular
- Common bone tumors.
- Connective tissue disorders
- Disorders of immunoglobulins
- T and B cell disorders
- Immunodeficiency syndromes.

Congenital dislocation of hip

Learning Objectives

- Understand the pathophysiology and principles of treatment of allergic and autoimmune disorders
- Understand the prevention, diagnosis, and management of crystalline diseases, systemic rheumatic diseases, spondyloarthropathies, vasculitis, inflammatory muscle disease, rickets, recreational and sports injury and soft-tissue diseases and trauma.
- The goal is early diagnosis and treatment of these conditions as well as management of acute arthritis and musculoskeletal disorders and in the long-term care of systemic disorders to prevent disability and death.

- Understand the likely types of soft tissue and bony injuries for each age group
- Be able to judge if these relate correctly to the stated mechanism of injury
- Be aware of rheumatological, infectious, malignant and non-accidental causes of musculoskeletal presentations
- Be able to examine a child in a way which localizes the injury
- Be able to manage and score pain appropriately
- Be able to request and interpret x-rays appropriately
- Understand when referral to physiotherapy would be of benefit
- Be able to arrange appropriate follow-up at a sensible time
- Resident must also be proficient in monitoring the effects of anti inflammatory, immunosuppressive, and cytotoxic drugs

PAEDIATRIC OTOLARYNGOLOGY:

- Acute and chronic otitis media
- Conductive/sensorineural hearing loss
- Post-diphtheritic palatal palsy
- Acute/chronic tonsillitis/adenoids
- Allergic rhinitis/sinusitis
- Foreign body.

Learning Objectives

- Have the understanding and skills to be able to assess and manage children presenting with ENT problems
- Be able to formulate a differential diagnosis
- Understand the life-threatening nature of some of these conditions
- Understand and recognize the possible respiratory complications of other system disorders
- Be able to select and interpret appropriate respiratory investigations including arterial blood gases, chest x- rays and peak flow measurements
- Understand when referral for specialist paediatric respiratory assessment is appropriate

PAEDIATRIC DERMATOLOGY:

- Exanthematous illnesses
- Vascular lesions
- Pigment disorders
- Vesicobullous disorders
- Pyogenic, fungal and parasitic infections
- Steven-Johnson syndrome
- Eczema
- Seborrheic dermatitis
- Drug rash
- Urticaria
- Alopecia
- Ichthyosis

Learning Objectives

- Have the knowledge and skills to be able to assess and manage children presenting with dermatological disorders
- Be able to describe accurately any rash
- Be able to formulate a differential diagnosis
- Recognize and manage the serious as well as the life-threatening complications of some of these conditions
- Understand and recognize the possible dermatological manifestations and complications of other system disorders
- Understand when referral for specialist dermatological opinion is appropriate
- Understand the principles of therapy for skin complaints

PAEDIATRIC OPHTHALMOLOGY:

- Errors of refraction and accommodation
- Astigmatism
- Partial/total loss of vision
- Nystagmus
- Cataract
- Night blindness
- Chorio-retinitis
- Strabismus
- Conjunctival and corneal disorders
- Retinopathy of pre-maturity
- Retinoblastoma
- Optic atrophy
- Papilledema.

Learning Objectives

- Have the knowledge and skills to be able to assess and manage children presenting with ophthalmological problems
- Be able to select and interpret appropriate ophthalmological investigations including Snellen charts and visual field examinations
- Understand when referral for specialist paediatric ophthalmological assessment is appropriate

CHILD AND ADOLESCENT PSYCHIATRY:

Rumination

- Pica, enuresis
- Encopresis
- Sleep disorders
- Habit disorders
- Breath holding spells
- Anxiety disorders
- Mood disorders
- Temper tantrums
- Attention deficit
- Hyperactivity disorder
- Infantile autism

Learning Objectives

- Understand normal behaviour patterns including response to injury and illness from birth to adolescence
- Understand about attachment and conduct disorders
- Be able to recognize abnormal child behaviour patterns
- Understand the influence of physical, emotional and social factors on development and health
- Understand about excessive crying and resources available to help families
- Understand the emotional impact of hospitalization on children

- Understand the behaviour aspects of eating disorders
- Be able to recognize fabricated illness and injury in children
- Understand adolescent behaviour in maturation
- Understand about the multi-disciplinary nature of child and adolescent mental health services

RESEARCH METHODOLOGY

Biostatistics

Clinical audit

Behavioral sciences

Learning Objectives

Understand some basic concept of research and its methodology.

Identify appropriate research topic.

Select and define appropriate research problem and parameters.

Prepare a project proposal.

Organize and conduct research in a more appropriate manner.

Write a research report and thesis.

Write a research grant proposal

Understand and apply statistical methods for design of biomedical research and analysis of research data

Plan clinical audit project and select audit topics

Consider best practice in selecting measurable criteria and standards

Discover approaches to collecting and analyzing data

Determine key area for improvement

Demonstrate communication and counseling skills

**CURRICULUM
OF
MD PEDIATRICS
1ST YEAR**

CURRICULUM MD PEDIATRICS

Module: ONE (Basic sciences)

Module Duration: 4 Months

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Respiratory System Embryology of respiratory system and its malformations (cleft palate, tracheoesophageal fistula, diaphragmatic hernia, choanal atresia)	Describe anatomy of respiratory passages and lungs Demonstrate the common congenital malformations and their effects	Interactive Seminar Video	MCQ SEQ
Pulmonary ventilation and its mechanics Control of ventilation Respiratory insufficiency Principles of gas exchange Pulmonary function test	Explain the control of ventilation Interpret pulmonary functions tests and principles of gas exchange	SGD	MCQ SEQ
Pneumonia Asthma Infections of upper and lower respiratory system Pharmacokinetics and dynamics of drugs used in respiratory diseases	Demonstrate pathophysiology of asthma Describe the pathological changes involved in upper respiratory tract infection and pneumonia. Define the dynamics and effects of drugs used in respiratory medicines	Interactive Seminar SGD	MCQ SEQ MCQ SEQ

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Cardiovascular System Embryology of heart and great vessels and their common malformation. Fetal circulation and its changes after birth</p> <p>Cardiac cycle Conduction system of heart and its defects (SVT, VT, AF,)</p> <p>Heart Failure Hypertension Effects of electrolyte disturbances on cardiac cycle</p>	<p>Demonstrate the development of heart and its common malformations like VSD, ASD, PDA, TOF, TGA and Coarctation of Aorta. Define the anatomy of heart and relation of various cardiac chambers to each other Identify the arrangement of conduction system of heart Demonstrate fetal circulation and its changes after birth</p> <p>Explain the cardiac cycle and its conduction defects</p> <p>Describe the pathophysiology of heart failure and hypertension Detect affects of electrolytes disturbances on cardiac cycle Distinguish the abnormalities of cardiac rhythm Understand dynamics and effects of various drugs used in cardiovascular medicines</p>	<p>Interactive lecture Video</p> <p>Interactive seminar</p> <p>Interactive lecture PBL</p> <p>SDG</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Blood Composition of blood Hematological values during infancy and childhood Variation of hemoglobin composition at various ages Common causes of anemia (nutritional and hemolytic) Hemostasis and clotting cascade Tests regarding hemoglobinopathies and clotting profile Pathophysiology of different anemias. Pathophysiology of coagulation disorders</p>	<p>Identify the hematological values during infancy and childhood Enlist common causes of anemia Interpret tests regarding hemoglobinopathies and clotting profile</p> <p>Define pathophysiology of different anemias like hemolytic, nutritional and aplastic anemias Demonstrate hemostasis and clotting cascade</p> <p>Understand dynamics and effects of various drugs used in haematological diseases</p>	<p>SDL PBL</p> <p>Interactive lecture</p> <p>SDL</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

CURRICULUM MD PEDIATRICS

Module: TWO (Basic sciences)

Module Duration: 4 Months

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
CNS CNS Malformation Blood supply of brain Gross anatomy of brain and spinal cord	Describe the anatomy and blood supply of brain Recognize the origin and course of cranial nerves Identify the malformations like meningomyelocele, hydrocephalus and charimalformation	Interactive Seminars and Videos	MCQ SEQ
CSF production and circulation Origin course and functions of cranial nerve Functions of different lobes of brain Functions of spinal cord and neuromuscular junctions	Recognize functions of different lobes of brain and cranial nerves Explain the functions of spinal cord Interpret the various tests related to nerve conduction and muscular functions	SGD	MCQ SEQ
Pathophysiology of seizures Pathophysiology of thrombosis and stroke Tumors of the brain	Describe the mechanism of seizures Identify the effects of thrombosis in the central nervous system Enlist the presentation of brain tumors	Interactive Seminars	SEQ
Antiepileptic drugs	Understand dynamics and effects of various drugs used to control seizures and their interactions	SDL	MCQ

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Endocrinology Embryology and malformation of Pituitary, Thyroid, Parathyroid, Adrenal gland, Hormones and their function</p> <p>Growth hormone production and effects Thyroxin synthesis and functions Parathyroid hormone functions Physiology of puberty Development and functions of gonads Calcium homeostasis</p>	<p>Demonstrate the development and malformations of pituitary, thyroid, parathyroid and adrenal gland. Describe the functions of hormones of pituitary, thyroid, parathyroid and adrenal gland.</p> <p>Describe pituitary hormones and their functions. Enlist the effects of various hormones in relation to development and puberty</p> <p>Enlist the effects of deficiency and over production of various hormones</p> <p>Understand dynamics and effects of various drugs used to treat endocrinal diseases like hypothyroidism, diabetes, hypoparathyroidism and disorders of sexual differentiation</p>	<p>Interactive Seminars and Videos</p> <p>Interactive Lecture</p> <p>PBL</p> <p>Interactive Lecture</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQs</p>

CURRICULUM MD PEDIATRICS

Module: THREE (Basic sciences)

Module Duration: 4 Months

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
GIT Development of Gastrointestinal system and its malformations	Demonstrate and identify esophageal atresia, tracheoesophageal fistula, intestinal atresia / malrotation, Hirschsprung's disease and imperforate anus	Interactive Seminars and Videos	MCQ SEQ
Location of viscera and their blood supply	Describe the blood supply of various viscera	Interactive Lecture	SEQ
Digestion, absorption and motility Functions of liver Pancreatic hormones and their functions Role of micronutrients and macronutrients	Explain the role of various factors involved in digestion and absorption Enlist various causes of jaundice Recognize the effects of deficiency of macronutrients and micronutrients like rickets, kwashiorkor, marasmus, effects of malabsorption of fat and sugars	SGD	MCQ SEQ
Development of ascities and portal hypertension	Distinguish various causes leading to ascities and portal hypertension Describe pathophysiology ascities and portal hypertension.	PBL	MCQ SEQ
	Understand pharmacokinetics, pharmacodynamics of various drugs used to treat abnormalities of digestion, absorption and motility	Interactive Lecture	MCQ

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Genitourinary system Development of genitourinary system and its malformations</p> <p>Anatomic details of glomerular and tubular arrangements, kidney ureters, bladder and urethra</p> <p>Glomerular and tubular functions Fluid and electrolyte homeostasis Acid-base balance Renal functions</p> <p>Proteinuria and pathophysiology of oedema Pathophysiology of vesicoureteric reflux</p>	<p>Recognize features associated with developmental anomalies of genitourinary system</p> <p>Describe the anatomy of genitourinary system</p> <p>Interpret various renal function tests Explain mechanism of homeostasis</p> <p>Enlist various causes of proteinuria and changes in homeostasis as a result of edema Distinguish between glomerular and tubular causes of proteinuria</p>	<p>Interactive Seminars and Videos</p> <p>SGD</p> <p>PBL</p> <p>Interactive Lecture</p>	<p>MCQ SEQ</p> <p>SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

CURRICULUM MD PEDIATRICS

Module: FOUR (Research Methodology and Biostatistics)

Module Duration: longitudinal (through out 1st year)

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Research methodology	Understand some basic concept of research and its methodology. Identify appropriate research topic. Select and define appropriate research problem and parameters. Prepare a project proposal. Organize and conduct research in a more appropriate manner. Write a research report and thesis. Write a research grant proposal	Workshop	MCQ SEQ
Biostatistics	Understand and apply statistical methods for design of biomedical research and analysis of research data	Workshop	MCQ SEQ
Clinical audit	Plan clinical audit project and select audit topics Consider best practice in selecting measurable criteria and standards Discover approaches to collecting and analyzing data Determine key area for improvement		
Behavioral sciences	Demonstrate communication and counseling skills	Workshop	MCQ SEQ

MD PEDIATRICS

1st Year Clinical

CURRICULUM MD PEDIATRICS

Module: _____ **ONE (Clinical)** _____

Module Duration: _____ **4 Months** _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
History Taking	Take a pertinent history from mother or care taker	Observed bedside history and examination SGD	Long Case / Short Case OSPE
Physical Examination	Demonstrate physical examination of all systems		
Clinical Methods	Pick and interpret physical findings		
Neonatal Examination	Make a logical diagnosis on the basis of history and examination Enlist differential diagnosis Plan, enlist and interpret investigations		
Glasgow coma scale	Score and grade Pediatric Glasgow coma scale	Bedside learning SGD	OSPE
Growth and development	Demonstrate growth and development in a child Interpret growth charts of height, weight and head circumference		
Growth charts			
Immunization	Describe immunization and different vaccines used in Pediatrics		
EPI Schedule	Describe EPI Schedule		
Pediatric nutrition			
Breast feeding	Enlist benefits of breast feeding	Interactive seminars	Long Case Short Case MCQ SEQ
Weaning	Demonstrate weaning practices		
Malnutrition	Demonstrate risk factors, clinical manifestations, complications and management of malnutrition		

Topic	Learning Objectives	Learning Strategy	Assessment tool
INFECTIONS:			
Diphtheria	Describe clinical presentations, complications and management plan of diphtheria	Interactive seminars	Long Case
Tetanus	Describe clinical presentations, complications and management plan of tetanus	Interactive seminars	Short Case
Pertusis	Describe clinical presentations, complications and management plan of Pertusis		MCQ
Poliomyelitis	Describe clinical presentations, complications and management plan of poliomyelitis		SEQ
	Plan and interpret investigations		
Dengue Fever	Describe presentation and management plan of dengue fever, dengue hemorrhagic fever and dengue shock syndrome	Workshop	MCQ
Meningitis	Demonstrate and differentiate clinical presentations and complications of bacterial and	Interactive Seminars	Long Case
Bacterial tuberculosis	tuberculosis meningitis		Short Case
Tuberculosis Meningitis	Plan and interpret investigations		MCQ
			SEQ
Chicken pox	Describe clinical presentations, complications and management plan of Chicken pox		MCQ
			SEQ

CURRICULUM MD PEDIATRICS

Module: THREE (Clinical)

Module Duration: 4 Months

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
NEONATOLOGY: Neonatal resuscitation Prematurity Low birth weight Sepsis Birth Asphyxia Neonatal jaundice Neonatal Fits Hemorrhagic disease of newborn	Demonstrate neonatal resuscitation Define prematurity, low birth weight, small for gestational age, large for gestational age Describe clinical presentation, complications of neonatal sepsis Plan management of neonatal sepsis Plan and interpret investigations Describe clinical presentation, complications of birth asphyxia Plan management of birth asphyxia Differentiate different causes of neonatal jaundice Plan and interpret investigations Plan management of neonatal jaundice Enlist and differentiate different causes of neonatal fits Plan and interpret investigations Plan management of neonatal fits Describe clinical presentation of hemorrhagic disease of newborn Plan and interpret investigations Plan management of hemorrhagic disease of newborn	Workshop Hands on training Interactive Seminars Bedside learning Interactive seminars SGD Interactive Seminar SGD	OSPE MCQ SEQ MCQ SEQ MCQ SEQ MCQ SEQ

**CURRICULUM
OF
MD PAEDIATRICS**

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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Neonatology Low birth weight Pre-maturity Common transient phenomena Respiratory distress Apnea Infections Jaundice Anemia and bleeding disorders Neurologic disorders Gastrointestinal disorders Renal disorders	Have the knowledge and skills to be able to assess and manage neonates Be able to formulate a differential diagnosis for a variety of common presenting symptoms Understand the life-threatening nature of some of the situations and the need to call for help · Be able to lead a resuscitation team Understand the pathophysiological processes leading to neonatal cardio pulmonary instability, including the role of thermoregulation Understand and recognize the signs and symptoms of neonatal distress Be able to select and interpret appropriate investigations and explain results to parents Be Able to deal with Low birth weight newborn Breathless newborn Newborn with jaundice	PBL Demonstration of necessary procedures like exchange transfusion Cardiopulmonary resuscitation Lumbar puncture Interactive Lecture SGD	MCQ SEQ

Malformations	Newborn with fits		
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Nutrition: Common Clinical Disorders: Maternal nutritional disorders; Impact on fetal outcome Nutrition for the low birth weight Breast feeding Infant feeding including complementary feeding Protein energy malnutrition Vitamin and mineral deficiencies Trace elements of nutritional importance Obesity Adolescent nutrition Nutritional management in diarrhea Nutritional management of systemic illnesses (celiac disease, hepatobiliary disorders, nephrotic syndrome) Parenteral and enteral nutrition</p>	<p>Understand the following</p> <p>Lactation management and complementary feeding</p> <p>Protein energy malnutrition (underweight, wasting, stunting)</p> <p>Failure to thrive</p>	<p>PBL</p> <p>Interactive Lecture</p> <p>SGD</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

in neonates & children.

in neonates & children.			
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CURRICULUM

MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Infectious Disorders: Common Clinical Disorders:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Principles and practices of infection control and isolation. <input type="checkbox"/> Common infectious diseases including their epidemiology, etiologic pathogens, pathogenesis, clinical manifestations, differential diagnosis, appropriate application and interpretation of diagnostic tests, treatment and prophylaxis for: <ul style="list-style-type: none"> a. Respiratory tract infections b. Central nervous system infections c. Cardiovascular infections 	<p>Have the knowledge and skills to be able to assess and manage children presenting with infectious diseases and conditions</p> <p>Be able to formulate a likely differential diagnosis</p> <p>Understand the life-threatening nature of some of these conditions</p> <p>Understand and recognize the possible infectious complications of other system disorders</p>	<p>PBL</p>	<p>MCQ</p> <p>SEQ</p>

<p>d. Fungal disease</p> <p>e. Mycobacterial infections</p> <p>f. Approach to the Patient with a Parasitic Infection</p> <p>g. Malaria</p> <p>h. Soft tissue, bone, and joint infections</p> <p>i. Fevers of unknown origin</p> <p>j. Infections in immunocompromised hosts</p> <p>k. Gastrointestinal tract infections</p> <p>l. Genitourinary tract infections including sexually transmitted diseases.</p> <p>m. Infections of indwelling venous and arterial catheters and prosthetic devices</p> <p>n. Nosocomial infections, in intensive care and general care settings</p> <p>o. Animal and human bite wounds.</p> <p>p. HIV infection and its associated complications</p> <p>q. Travel-related infections, diagnosis, treatment, and prevention</p> <p>r. Bioterrorism: identifying infections; understanding public</p>	<p>Be able to select and interpret appropriate laboratory investigations, including microbiology and virology cultures, and understand the significance of results pertaining to all age-groups</p> <p>Understand when referral for specialist infectious disease or allergy assessment is appropriate</p> <p>Understand the causes of vulnerability to infection</p> <p>Understand the classification of infectious agents</p> <p>Understand the epidemiology, pathology and 'natural history' of common infections of</p>	<p>Interactive</p> <p>Lecture</p>	<p>MCQ</p> <p>SEQ</p>
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<p>health aspects.</p> <p>Active Immunization against infectious diseases</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recommended immunization of infants, children and adolescents. <p>Basic principles of anti-infective therapy, including the use of antibacterial, antiviral, antifungal, anti-mycobacterial, and anti-parasitic agents with regard to mechanisms of action, spectra of activity, doses and regimens, drug interactions, mechanisms of resistance, appropriate clinical applications, and adverse effects/toxicities.</p> <p>Acute onset pyrexia</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prolonged pyrexia <input type="checkbox"/> Septic shock <input type="checkbox"/> Anaphylaxis <input type="checkbox"/> Abdominal or pelvic pain <input type="checkbox"/> Cellulitis <input type="checkbox"/> Diarrhea <input type="checkbox"/> Dysuria <input type="checkbox"/> Facial or ear pain <input type="checkbox"/> Fever, including fever in immunosuppressed patient <input type="checkbox"/> Hepatitis <input type="checkbox"/> Joint effusion 	<p>the newborn and children in Pakistan and the public health policies associated with them</p> <p>Understand the importance of common infections, for example TB, Malaria, Hepatitis C</p> <p>Be able to follow agreed national and local guidelines on the notification of infectious diseases</p> <p>Understand the rationale for prescribing common antimicrobials</p> <p>Understand the indications for antimicrobial prophylaxis</p>	<p>PBL</p> <p>SGD</p>	<p>MCQ</p> <p>SEQ</p>
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<ul style="list-style-type: none"><input type="checkbox"/> Limb, sacral ulcers<input type="checkbox"/> Lymphadenopathy<input type="checkbox"/> Meningitis			
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Emergency and Critical Care:</p> <p>Shock</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cardio-respiratory arrest <input type="checkbox"/> Respiratory failure <input type="checkbox"/> Congestive cardiac failure <input type="checkbox"/> Acute UTI <input type="checkbox"/> Acute renal failure <input type="checkbox"/> Febrile child <input type="checkbox"/> Status epilepticus <input type="checkbox"/> Head injury <input type="checkbox"/> Spinal injury <input type="checkbox"/> Burns 	<p>Be able to recognize the patient at risk for an obstructed airway</p> <ul style="list-style-type: none"> <input type="checkbox"/> Be able to recognize the patient in respiratory failure or arrest <input type="checkbox"/> Be able to formulate a differential diagnosis by age of a patient with acute life threatening respiratory difficulty and prioritize management <input type="checkbox"/> Understand the life-threatening nature of these problems and know when to call for help of more experienced colleagues <input type="checkbox"/> Be able to lead a resuscitation team <input type="checkbox"/> Be able to recognize the child in shock and formulate a differential diagnosis between compensated and uncompensated shock <input type="checkbox"/> Understand the indications, pharmacology, contra indications, dose calculation and routes of administration of drugs used in resuscitation and in the stabilization of children in cardiac arrest or failure <input type="checkbox"/> Be able to obtain venous and arterial access including IV & central lines <input type="checkbox"/> Be able to ensure appropriate non-invasive and invasive monitoring including arterial and end tidal-CO₂ <input type="checkbox"/> Obtain, interpret and react appropriately to blood gas results and blood pressure measurements across a range of emergency presentations in all paediatric age groups <input type="checkbox"/> Understand the prognostic factors for outcome of cardiac resuscitation <input type="checkbox"/> Understand the indications and procedures for transport to a definitive facility following stabilization <input type="checkbox"/> Understand the epidemiology of poisoning and be able to identify the major types of ingestions by age <input type="checkbox"/> Understand and recognize the specific signs and symptoms of poisoning with a range 	<p>PBL</p> <p>Demonstration of life saving procedures like CPR, dealing with arrhythmias like SVT, controlling fits and treatment of shock and cardiac failure</p>	<p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p>

CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Genetics:</p> <p>Common Clinical Disorders:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Principles of inheritance <input type="checkbox"/> Pedigree drawing <input type="checkbox"/> Chromosomal disorders <input type="checkbox"/> Single gene disorders <input type="checkbox"/> Multifactorial/polygenic disorders <input type="checkbox"/> Genetic diagnosis and prenatal diagnosis. 	<p>Be able to draw the pedigree</p> <p>Be Able to calculate the risk in other siblings and future generation</p>	<p>PBL</p> <p>Interactive Lecture</p> <p>SGD</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

CURRICULUM

MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Community and Social Pediatrics National health programs related to child health <input type="checkbox"/> National health nutrition programs <input type="checkbox"/> Nutrition screening of community <input type="checkbox"/> Prevention of blindness <input type="checkbox"/> School health programs <input type="checkbox"/> Child abuse and neglect <input type="checkbox"/> Disability and rehabilitation <input type="checkbox"/> Prevention of sexually transmitted diseases <input type="checkbox"/> Contraception <input type="checkbox"/> Health legislation <input type="checkbox"/> National policy on children, adolescence,	<p>Be able to prevent diseases related with nutritional deficiencies</p> <p>Be able to perform nutritional screening of community</p>	<p>PBL</p> <p>Interactive</p> <p>Lecture</p>	<p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p>

<p>adoption, child labor, juvenile delinquency etc.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Government and non-government support services for children <input type="checkbox"/> Investigation of adverse events following immunization in the community <p>General principles of prevention and control of infections including food borne, waterborne, soil borne and vector borne diseases</p> <ul style="list-style-type: none"> <input type="checkbox"/> Investigation of an outbreak in a community 	<p>Understand health legislation and national health program related to child health</p>	<p>SGD</p>	<p>MCQ</p> <p>SEQ</p>
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Cardiovascular System</p> <p>Cardiac muscle: electrical and mechanical properties.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Metabolism <input type="checkbox"/> Origin of the Heart beat, the electrical activity of the heart (normal and findings in cardiac and systemic diseases) <input type="checkbox"/> Mechanism of production of heart sounds, their location, characters and relationship with the cardiac cycle. <input type="checkbox"/> The normal electrocardiogram and characters of its various components. <p>Significance of its parts, voltage and calibration, principles and methods</p>	<p>Be able to perform:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Endotracheal intubation <input type="checkbox"/> Cardiopulmonary resuscitation (pediatric and neonatal) <input type="checkbox"/> Administration of oxygen <input type="checkbox"/> Venepuncture and establishment of vascular access <input type="checkbox"/> Collection of blood from central lines 	<p>PBL</p> <p>Demonstration of all necessary life saving procedures like CPR and pericardiocentesis</p>	<p>MCQ</p> <p>SEQ</p>

<p>of recording, electrocardiographic leads and general information obtained from ECG.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Physiology and abnormalities of apex beat. <input type="checkbox"/> Cardiac output, amount, distribution, measurement, control, cardiac index and cardiac reserve. <input type="checkbox"/> Echocardiography, exercise tolerance test and the basis of ETT. <input type="checkbox"/> Patho-physiology of cardiac failure, valvular heart disease and hypertension. <p>Interpretation of data of diagnostic tests.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dynamics of blood and lymph flow: biophysics <input type="checkbox"/> Arterial and arteriolar circulation, capillary circulation, lymphatic circulation and venous circulation <input type="checkbox"/> Laws of haemodynamics governing flow, pressure and resistance in blood vessels. <input type="checkbox"/> Arterial blood pressure, measurement 	<ul style="list-style-type: none"> <input type="checkbox"/> Umbilical venous cannulation and sampling <input type="checkbox"/> Administration of fluids, blood, blood components <input type="checkbox"/> Parenteral nutrition <input type="checkbox"/> Intraosseous fluid administration <input type="checkbox"/> Saphenous vein cut down <input type="checkbox"/> Manual airway clearance <input type="checkbox"/> Airway insertion <input type="checkbox"/> Orotracheal and nasotracheal intubation <input type="checkbox"/> Mechanical ventilation 	<p>Interactive Lecture</p> <p>SGD</p>	<p>MCQ</p> <p>SEQ</p>
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<p>and regulation.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Vasomotor system and control of blood vessels. <input type="checkbox"/> Characters of arterial pulse and venous pulse. <input type="checkbox"/> Significance of central venous pressure. <input type="checkbox"/> Mechanism of haemorrhage and shock. <input type="checkbox"/> Coronary, cutaneous, splanchnic and peripheral circulation. Its measurement, control and special features, circulatory changes during muscular exercise <input type="checkbox"/> Cardiovascular regulatory mechanisms local regulation <input type="checkbox"/> Endothelium; systemic regulation by hormones and systemic regulation by nervous system. <input type="checkbox"/> Circulation through special organs: coronary circulation, cerebral circulation and pulmonary circulation 	<ul style="list-style-type: none"> <input type="checkbox"/> Use of continuous positive airways pressure <input type="checkbox"/> Cricothyrotomy and percutaneous transtracheal ventilation <input type="checkbox"/> Direct current electrical cardioversion defibrillation <input type="checkbox"/> External cardiac pacing <input type="checkbox"/> Pericardiocentesis <input type="checkbox"/> Interpretation of ECG abnormalities 	<p>SGD</p>	<p>MCQ</p> <p>SEQ</p>
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Paediatric Cardiology Common Clinical Disorders: <input type="checkbox"/> Congenital heart diseases (cyanotic and acyanotic) <input type="checkbox"/> Rheumatic fever <input type="checkbox"/> Rheumatic heart disease <input type="checkbox"/> Infective endocarditis <input type="checkbox"/> Arrhythmia <input type="checkbox"/> Diseases of myocardium (cardiomyopathy, myocarditis) <input type="checkbox"/> Diseases of pericardium <input type="checkbox"/> Systemic hypertension <input type="checkbox"/> Hyperlipidemia in children. Approach to Common Clinical Presentations: <input type="checkbox"/> Murmur <input type="checkbox"/> Cyanosis and cyanotic	<p>Have the knowledge and skills to be able to assess and manage babies and children presenting to with cardiological disorders · Be able to formulate a differential diagnosis ·</p> <p>Understand the life-threatening nature of some of these conditions and when to ask for the help of a cardiologist or others with more specialized expertise Paediatrics</p> <p><input type="checkbox"/> Understand and recognize the possible cardiac complications of other system disorders</p> <p><input type="checkbox"/> Be able to select and interpret appropriate cardiological investigations including ECGs at all ages and know the indications for echocardiography</p> <p><input type="checkbox"/> Understand the pharmacology, indications, side-effects and complications of cardiac</p>	PBL Interactive Lecture	MCQ MCQ SEQ

<p>spells</p> <ul style="list-style-type: none"><input type="checkbox"/> Edema and Congestive heart failure<input type="checkbox"/> Tachycardia<input type="checkbox"/> Palpitations<input type="checkbox"/> Systemic hypertension<input type="checkbox"/> Arrhythmia<input type="checkbox"/> Shock<input type="checkbox"/> Syncope	<p>drugs used commonly in the emergency department</p> <ul style="list-style-type: none"><input type="checkbox"/> Understand when referral for specialist paediatric cardiology assessment for further management is appropriate	<p>SGD</p>	<p>MCQ</p> <p>SEQ</p>
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<ul style="list-style-type: none"> <input type="checkbox"/> GER <input type="checkbox"/> Acute pneumonia <input type="checkbox"/> Recurrent and interstitial pneumonia <input type="checkbox"/> Suppurative lung disease <input type="checkbox"/> Atelectasis <input type="checkbox"/> Lung cysts <input type="checkbox"/> Emphysema and hyper-inflation <input type="checkbox"/> Bronchial asthma <input type="checkbox"/> Pulmonary edema <input type="checkbox"/> Bronchiectasis <input type="checkbox"/> Pleural effusion <input type="checkbox"/> Pulmonary leaks <input type="checkbox"/> Mediastinal mass. 	<ul style="list-style-type: none"> <input type="checkbox"/> Be able to prioritize and interpret investigations and treatment <input type="checkbox"/> Be able to formulate a differential diagnosis <input type="checkbox"/> Be able to recognize other conditions with similar presentations including cardiac causes <input type="checkbox"/> Understand the principles of management of community-acquired pneumonia according to local antimicrobial resistance 	<p>SGD</p>	<p>MCQ SEQ</p>
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Gastroenterology & Hepatology</p> <p>Diseases of mouth, oral cavity and tongue</p> <ul style="list-style-type: none"> <input type="checkbox"/> Disorders of deglutition and esophagus <input type="checkbox"/> Peptic ulcer disease <input type="checkbox"/> H. Pylori infection <input type="checkbox"/> Foreign body <input type="checkbox"/> Congenital pyloric stenosis <input type="checkbox"/> Intestinal obstruction <input type="checkbox"/> Malabsorption syndrome <input type="checkbox"/> Acute and chronic diarrhea <input type="checkbox"/> Irritable bowel syndrome <input type="checkbox"/> Ulcerative colitis <input type="checkbox"/> Hirschprung's disease <input type="checkbox"/> Anorectal malformations 	<p>Have the understanding and skills to be able to assess and manage children presenting with gastrointestinal disorders</p> <ul style="list-style-type: none"> <input type="checkbox"/> Be able to formulate a differential diagnosis <input type="checkbox"/> Understand the life-threatening nature of some of these conditions <input type="checkbox"/> Understand and recognize the possible gastrointestinal complications of other system disorders 	<p>PBL</p> <p>Interactive</p> <p>Lecture</p>	<p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p>

<ul style="list-style-type: none"> <input type="checkbox"/> Liver disorders <input type="checkbox"/> Hepatitis <input type="checkbox"/> Hepatic failure <input type="checkbox"/> Chronic liver disease <input type="checkbox"/> Wilson's disease <input type="checkbox"/> Budd-Chiari syndrome <input type="checkbox"/> Metabolic diseases of liver <input type="checkbox"/> Cirrhosis and portal hypertension <input type="checkbox"/> Fecal incontinence <input type="checkbox"/> Constipation <input type="checkbox"/> Anorectal discomfort, bleeding, or pruritus <input type="checkbox"/> Food intolerance <input type="checkbox"/> Gastrointestinal bleeding <input type="checkbox"/> Iron-deficiency anemia <input type="checkbox"/> Malnutrition <input type="checkbox"/> Jaundice 	<ul style="list-style-type: none"> <input type="checkbox"/> Be able to select and interpret appropriate investigations as well as understand the role of interventional procedures like endoscopies in the investigation of acutely unwell patients <input type="checkbox"/> Understand when to refer for specialist gastroenterological opinion <input type="checkbox"/> Be able to provide appropriate monitoring including measurement of central venous pressure if required 	SGD	<p>MCQ</p> <p>SEQ</p>
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Nephrology</p> <p>Acute and chronic glomerulonephritis</p> <ul style="list-style-type: none"> <input type="checkbox"/> Nephrotic syndrome <input type="checkbox"/> Hemolytic uremic syndrome <input type="checkbox"/> Urinary tract infection <input type="checkbox"/> VUR and renal scarring <input type="checkbox"/> Renal involvement in systemic diseases <input type="checkbox"/> Renal tubular disorders <input type="checkbox"/> Con-genital and hereditary renal disorders <input type="checkbox"/> Renal and bladder stones <input type="checkbox"/> Posterior urethral valves <input type="checkbox"/> Hydronephrosis <input type="checkbox"/> Voiding dysfunction 	<p>Have the knowledge and skills to be able to assess and manage children presenting with renal/urinary problems.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have the knowledge and understanding of fluid and electrolyte imbalances and blood pressure in children with kidney problems <input type="checkbox"/> Understand the life-threatening nature of some of these conditions <input type="checkbox"/> Be able to perform an accurate assessment and management of fluid status 	<p>PBL</p> <p>Demonstration of procedures like catheterization, peritoneal dialysis and suprapuric aspiration</p> <p>Interactive</p> <p>Lecture</p>	<p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p>

<ul style="list-style-type: none"> <input type="checkbox"/> Enuresis <input type="checkbox"/> Undescended testis <input type="checkbox"/> Wilm's tumor <input type="checkbox"/> Fluid-electrolyte disturbances. <input type="checkbox"/> Hematuria (gross) <input type="checkbox"/> Hypertension <input type="checkbox"/> Incontinence <input type="checkbox"/> Dysuria <input type="checkbox"/> Edema <p>Renal failure (acute and chronic).</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Be able to select and interpret appropriate renal investigations including urine microbiology and renal function tests <input type="checkbox"/> Understand when referral for specialist paediatric nephrology, general surgical or urological assessment is appropriate 	<p>SGD</p>	<p>MCQ</p> <p>SEQ</p>
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<ul style="list-style-type: none"> <input type="checkbox"/> Learning disabilities <input type="checkbox"/> Muscular dystrophies <input type="checkbox"/> Acute flaccid paralysis and surveillance <input type="checkbox"/> Ataxia <input type="checkbox"/> Movement disorders of child-hood <input type="checkbox"/> CNS tumors <input type="checkbox"/> CNS malformations. <input type="checkbox"/> Limping child <input type="checkbox"/> Convulsions <input type="checkbox"/> Abnormality of gait <input type="checkbox"/> Abnormal speech Headache Intracranial space occupying lesion Paraplegia <input type="checkbox"/> Quadriplegia <input type="checkbox"/> Large head <input type="checkbox"/> Small head <input type="checkbox"/> Floppy infant <input type="checkbox"/> Acute flaccid paralysis <input type="checkbox"/> Cerebral palsy and other neuromotor disability 	<ul style="list-style-type: none"> <input type="checkbox"/> Understand the life-threatening nature of some of these conditions <input type="checkbox"/> Understand and recognize the possible neurological complications of other system disorders <input type="checkbox"/> Be able to select and interpret appropriate neurological investigations with major abnormalities including EEG and head CT scans <input type="checkbox"/> Understand when referral for specialist neurological opinion is appropriate 	<p>SGD</p>	<p>MCQ SEQ</p>
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Hematology and Oncology:</p> <p>Deficiency anemias</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hemolytic anemias <input type="checkbox"/> Aplastic anemias <input type="checkbox"/> Pancytopenia <input type="checkbox"/> Disorders of hemostasis <input type="checkbox"/> Thrombocytopenia <input type="checkbox"/> Blood component therapy <input type="checkbox"/> Transfusion related infections <input type="checkbox"/> Bone marrow transplant/ stem cell transplant <input type="checkbox"/> Acute and chronic leukemia <input type="checkbox"/> Myelodysplastic syndrome <input type="checkbox"/> Hodgkin disease <input type="checkbox"/> Non-Hodgkin's lymphoma 	<ul style="list-style-type: none"> <input type="checkbox"/> Have the knowledge and skills to be able to assess and manage children presenting with haematological and oncological disorders <input type="checkbox"/> Be able to formulate a likely differential diagnosis <input type="checkbox"/> Understand the life-threatening nature of some of these conditions <input type="checkbox"/> Understand and recognize the possible haematological and oncological complications of other system disorders <input type="checkbox"/> Understand the normal age-dependent haematological blood values <input type="checkbox"/> Understand the indications, contra indications and complications of the use of blood products <input type="checkbox"/> Understand about national and local blood transfusion policies 	<p>PBL</p> <p>Interactive</p> <p>Lecture</p>	<p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p>

<ul style="list-style-type: none"><input type="checkbox"/> Neuroblastoma<input type="checkbox"/> Hyper-coagulable states <p>Bleeding, bruising, or petechiae</p> <ul style="list-style-type: none"><input type="checkbox"/> Family history of anemia or bleeding disorder<input type="checkbox"/> Lymphadenopathy	<ul style="list-style-type: none"><input type="checkbox"/> Understand the legal process if faced with parental objection to the use of blood products<input type="checkbox"/> Understand when referral for specialist paediatric haematological or oncological assessment is appropriate	SGD	MCQ SEQ
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CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Paediatric Endocrinology: <input type="checkbox"/> Hypopituitarism/hyperpituitarism <input type="checkbox"/> Diabetes insipidus <input type="checkbox"/> Pubertal disorders <input type="checkbox"/> Hypo- and hyperthyroidism <input type="checkbox"/> Hypo- and hyperparathyroidism <input type="checkbox"/> Adrenal insufficiency <input type="checkbox"/> Cushing's syndrome <input type="checkbox"/> Adrenogenital syndromes <input type="checkbox"/> Diabetes mellitus <input type="checkbox"/> Hypoglycemia <input type="checkbox"/> Short stature <input type="checkbox"/> Failure to thrive <input type="checkbox"/> Gonadal dysfunction and intersexuality <input type="checkbox"/> Pubertal changes and gynecological disorders. <input type="checkbox"/> Goiter (diffuse, nodular) <input type="checkbox"/> Ambiguous genitalia <input type="checkbox"/> Polyuria, polydipsia <input type="checkbox"/> Weight gain, obesity	<input type="checkbox"/> Have the understanding and skills to be able to assess and manage children presenting with endocrine or metabolic disorders <input type="checkbox"/> Be able to formulate a differential diagnosis <input type="checkbox"/> Understand the life-threatening nature of some of these conditions <input type="checkbox"/> Understand and recognize the possible metabolic and endocrine complications of other system disorders <input type="checkbox"/> Be able to select and interpret appropriate endocrine and metabolic investigations <input type="checkbox"/> Be able to measure children accurately and assess their growth using appropriate growth charts, taking into account parental stature and pubertal status <input type="checkbox"/> Be able to assess pubertal stages of development accurately <input type="checkbox"/> Understand when and how to perform endocrine and metabolic investigations in neonates and children <input type="checkbox"/> Understand about the biochemical findings in children presenting with metabolic disease Recognize and be able to manage clinical and biochemical features of electrolyte and acid base abnormalities <input type="checkbox"/> Understand the differential diagnosis of patients with ambiguous genitalia	PBL Demonstration of SMR staging Interactive Lecture SGD	MCQ SEQ MCQ SEQ MCQ SEQ

CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Immunology and Rheumatology:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Arthritis (acute and chronic) <input type="checkbox"/> Major congenital orthopedic deformities <input type="checkbox"/> Bone and joint infections; Pyogenic, tubercular <input type="checkbox"/> Common bone tumors. <input type="checkbox"/> Connective tissue disorders <input type="checkbox"/> Disorders of immunoglobulins <input type="checkbox"/> T and B cell disorders <input type="checkbox"/> Immunodeficiency syndromes. <input type="checkbox"/> Congenital dislocation of hip 	<ul style="list-style-type: none"> <input type="checkbox"/> Understand the pathophysiology and principles of treatment of allergic and autoimmune disorders <input type="checkbox"/> Understand the prevention, diagnosis, and management of crystalline diseases, systemic rheumatic diseases, spondyloarthropathies, vasculitis, inflammatory muscle disease, rickets, recreational and sports injury and soft-tissue diseases and trauma. <input type="checkbox"/> The goal is early diagnosis and treatment of these conditions as well as management of acute arthritis and musculoskeletal disorders and in the long-term care of systemic disorders to prevent disability and death. <input type="checkbox"/> Understand the likely types of soft tissue and bony injuries for each age group <input type="checkbox"/> Be able to judge if these relate correctly to the stated mechanism of injury <input type="checkbox"/> Be aware of rheumatological, infectious, malignant and non-accidental causes of musculoskeletal presentations <input type="checkbox"/> Be able to examine a child in a way which localizes the injury <input type="checkbox"/> Be able to manage and score pain appropriately <input type="checkbox"/> Be able to request and interpret x-rays appropriately <input type="checkbox"/> Understand when referral to physiotherapy would be of benefit <input type="checkbox"/> Be able to arrange appropriate follow-up at a sensible time <input type="checkbox"/> Resident must also be proficient in monitoring the effects of anti inflammatory, immunosuppressive, and cytotoxic drugs 	<p>PBL Demonstration of Barlows and auto learning procedures for congenital dislocation of hip</p> <p>Interactive Lecture</p> <p>SGD</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Otolaryngology:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Acute and chronic otitis media <input type="checkbox"/> Conductive/sensorineural hearing loss <input type="checkbox"/> Post-diphtheritic palatal palsy <input type="checkbox"/> Acute/chronic tonsillitis/adenoids <input type="checkbox"/> Allergic rhinitis/sinusitis <input type="checkbox"/> Foreign body. 	<ul style="list-style-type: none"> <input type="checkbox"/> Have the understanding and skills to be able to assess and manage children presenting with ENT problems <input type="checkbox"/> Be able to formulate a differential diagnosis <input type="checkbox"/> Understand the life-threatening nature of some of these conditions <input type="checkbox"/> Understand and recognize the possible respiratory complications of other system disorders <input type="checkbox"/> Be able to select and interpret appropriate respiratory investigations including arterial blood gases, chest x- rays and peak flow measurements <input type="checkbox"/> Understand when referral for specialist paediatric respiratory assessment is appropriate 	<p>PBL</p> <p>Demonstration of technique of autoscopy</p> <p>Interactive Lecture</p> <p>SGD</p>	<p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p> <p>MCQ</p> <p>SEQ</p>

CURRICULUM

MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
<p>Paediatric Dermatology:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Exanthematous illnesses <input type="checkbox"/> Vascular lesions <input type="checkbox"/> Pigment disorders <input type="checkbox"/> Vesicobullous disorders <input type="checkbox"/> Pyogenic, fungal and parasitic infections <input type="checkbox"/> Steven-Johnson syndrome <input type="checkbox"/> Eczema <input type="checkbox"/> Seborrheic dermatitis <input type="checkbox"/> Drug rash <input type="checkbox"/> Urticaria <input type="checkbox"/> Alopecia <input type="checkbox"/> Ichthyosis 	<ul style="list-style-type: none"> <input type="checkbox"/> Have the knowledge and skills to be able to assess and manage children presenting with dermatological disorders <input type="checkbox"/> Be able to describe accurately any rash <input type="checkbox"/> Be able to formulate a differential diagnosis <input type="checkbox"/> Recognize and manage the serious as well as the life-threatening complications of some of these conditions <input type="checkbox"/> Understand and recognize the possible dermatological manifestations and complications of other system disorders <input type="checkbox"/> Understand when referral for specialist dermatological opinion is appropriate <input type="checkbox"/> Understand the principles of therapy for skin complaints 	<p>PBL</p> <p>Interactive Lecture</p> <p>SGD</p>	<p>MCQ SEQ</p> <p>MCQ SEQ</p> <p>MCQ SEQ</p>

CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Paediatric Ophthalmology: <input type="checkbox"/> Errors of refraction and accommodation <input type="checkbox"/> Astigmatism <input type="checkbox"/> Partial/total loss of vision <input type="checkbox"/> Nystagmus <input type="checkbox"/> Cataract <input type="checkbox"/> Night blindness <input type="checkbox"/> Chorio-retinitis <input type="checkbox"/> Strabismus <input type="checkbox"/> Conjunctival and corneal disorders <input type="checkbox"/> Retinopathy of prematurity <input type="checkbox"/> Retinoblastoma <input type="checkbox"/> Optic atrophy <input type="checkbox"/> Papilledema.	<input type="checkbox"/> Have the knowledge and skills to be able to assess and manage children presenting with ophthalmological problems <input type="checkbox"/> Be able to select and interpret appropriate ophthalmological investigations including Snellen charts and visual field examinations <input type="checkbox"/> Understand when referral for specialist paediatric ophthalmological assessment is appropriate	PBL Demonstration of fundoscopy Interactive Lecture	MCQ SEQ MCQ SEQ MCQ SEQ

CURRICULUM MD PAEDIATRICS

Module: _____

Module Duration: _____

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Child and Adolescent Psychiatry: Rumination <input type="checkbox"/> Pica, enuresis <input type="checkbox"/> Encopresis <input type="checkbox"/> Sleep disorders <input type="checkbox"/> Habit disorders <input type="checkbox"/> Breath holding spells <input type="checkbox"/> Anxiety disorders <input type="checkbox"/> Mood disorders <input type="checkbox"/> Temper tantrums <input type="checkbox"/> Attention deficit <input type="checkbox"/> Hyperactivity disorder <input type="checkbox"/> Infantile autism	<input type="checkbox"/> Understand normal behaviour patterns including response to injury and illness from birth to adolescence <input type="checkbox"/> Understand about attachment and conduct disorders <input type="checkbox"/> Be able to recognize abnormal child behaviour patterns <input type="checkbox"/> Understand the influence of physical, emotional and social factors on development and health <input type="checkbox"/> Understand about excessive crying and resources available to help families <input type="checkbox"/> Understand the emotional impact of hospitalization on children <input type="checkbox"/> Understand the behaviour aspects of eating disorders <input type="checkbox"/> Be able to recognize fabricated illness and injury in children <input type="checkbox"/> Understand adolescent behaviour in maturation <input type="checkbox"/> Understand about the multi-disciplinary nature of child and adolescent mental health services	PBL Interactive Lecture SGD	MCQ SEQ MCQ SEQ MCQ SEQ

RESEARCH/ THESIS WRITING

Total of one year will be allocated for work on a research project with thesis writing during clinical training. Project must be completed and thesis be submitted before the end of training.

Research can be done as one block in 4th year of training or it can be stretched over four years of training in the form of regular periodic rotations during the course as long as total research time is equivalent to one calendar year.

Research Experience

The active research component program must ensure meaningful, supervised research experience with appropriate protected time for each resident while maintaining the essential clinical experience. Recent productivity by the program faculty and by the residents will be required, including publications in peer-reviewed journals. Residents must learn the design and interpretation of research studies, responsible use of informed consent, and research methodology and interpretation of data. The program must provide instruction in the critical assessment of new therapies and of the surgical literature. Residents should be advised and supervised by qualified staff members in the conduct of research.

Clinical Research

Each resident will be encouraged to participate in at least one clinical research study to become familiar with:

1. Research design
2. Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation
3. Data collection and data analysis

4. Research ethics and honesty

5. Peer review process

This usually is done during the consultation and outpatient clinic rotations.

Case Studies or Literature Reviews

It will be encouraged that each resident will write, and submit for publication in a peer-reviewed journal, a case study or literature review on a topic of his/her choice.

Laboratory Research

Bench Research

Participation in laboratory research is at the option of the resident and may be arranged through any faculty member of the Division. When appropriate, the research may be done at other institutions.

Research involving animals

Each resident participating in research involving animals is required to:

1. Become familiar with the pertinent Rules and Regulations of the RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI i.e. those relating to "Health and Medical Surveillance Program for Laboratory Animal Care Personnel" and "Care and Use of Vertebrate Animals as Subjects in Research and Teaching"
2. Read the "Guide for the Care and Use of Laboratory Animals"
3. View the videotape of the symposium on Humane Animal Care

Research involving Radioactivity

Each resident participating in research involving radioactive materials is required to

1. Attend a Radiation Review session
2. Work with an Authorized User and receive appropriate instruction from him/her.

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. Attend genetic clinics and rounds for at least one month.
9. Attend sessions of genetic counseling
10. Self study, assignments and use of internet
11. Bedside teaching rounds in ward
12. OPD & Follow up clinics
13. 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 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 Paediatrics 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 Paediatrics should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. The chief resident shall chair this session (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure

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.
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.
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.
10. Each resident will observe and participate in each of the following procedures, preferably done on patients firstly under supervision and then independently

3. Annual Grand Meeting

Once a year all residents enrolled for MD Paediatrics should be invited to the annual meeting at RMURawalpindi.

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.

LOG BOOK

The residents must maintain a logbook and get it signed regularly by the supervisor. A complete and duly certified logbook 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.

Proposed Format of Log Book is as follows:

Candidate's Name: -----

Supervisor -----

Roll No. -----

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

Residents should become proficient in performing the related procedures. After observing the technique, they will be observed while performing the procedure and, when deemed competent by the supervising physician, will perform it independently. They will be responsible for obtaining informed consent, performing the procedure, reviewing the results with the pathologist and the attending physician and informing the patient and, where appropriate, the referring physician of the results.

Procedures performed

S. No.	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedures performed	Supervisor's Signature
1					
2					
3					
4					

Paediatric Emergencies Handled

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

Case Presented

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

Seminar/Journal Club Presentation

S. No.	Date	Topic	Supervisor's Signature
1			
2			
3			
4			

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.

S. No.	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Supervisor's Signature
1				
2				
3				
4				

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. 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 degrees for successful completion of courses.

MD PAEDIATRICS EXAMINATIONS

Abridged Examination (At the end of 1st year Programme)

MD Paediatrics

Total Marks: 350

All candidates admitted in MD Paediatrics course shall appear in Abridged Examination at the end of first calendar year.

Abridged Examination: M.D. Paediatrics

Written Exam	=	300 Marks
Video Projected Clinical Examination	=	50 Marks
Total	=	350 Marks

Written Paper: 150 MCQs Single best type with 2 marks each MCQ.

Principles of General Paediatrics	=	100 MCQs
Basic Sciences	=	50 MCQs
Physiology	=	20 MCQs
Pharmacology	=	10 MCQs
Pathology	=	20 McQs
Total	=	300 Marks

Video Projected Clinical Exam (VPCE) 50 Marks

The VPCE will consist of 25 videos/ Slides of clinical material and scenarios from General Paediatrics and related areas. Each Video/ slide will have one question and carry 2 marks for correct and 0.5 deduction for each incorrect.

Final MD Paediatrics

Total Marks: 1500

All candidates admitted in MD course shall appear in Final examination at the end of structured training programme (end of 4th calendar year).

There shall be two written papers of 250 marks each, Clinical, TOACS/OSCE & ORAL of 500 marks, CIS of 100 marks and thesis examination of 400 marks

Topics included in paper 1

1. Pediatric Cardiology (20 MCQs)
2. Pediatric Pulmonology (20 MCQs)
3. Pediatric Gastroenterology & Hepatology (20 MCQs)
4. Pediatric Hematology & Oncology (20 MCQs)
5. Pediatric Neurology (20 MCQs)

Topics included in paper 2

1. Pediatric Nephrology (20 MCQs)
2. Neonatology (20 MCQs)
3. Developmental Paediatrics (15 MCQs)
4. Paediatric Endocrinology (15 MCQs)
5. Pediatric Dermatology (10 MCQs)
6. Pediatric Rheumatology (05 MCQs)
7. Pediatric Psychiatry (05 MCQs)

8. Pediatric Ophthalmology & Otolaryngology (10MCQs)

Components of Final Examination

Theory

Paper I	250 Marks	3 Hours
5 SEQs	50 Marks	
100 MCQs	200 Marks	
 Paper II	 250 Marks	 3 Hours
5 SEQs	50 Marks	
100 MCQs	200 Marks	

The 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 4th calendar year of the MD programme. The examination shall include thesis evaluation with defense.