Course Curriculum

MS Paediatric Surgery
Phase A & B

Contents:

Paediatric Surgical Curriculum

Introduction

Paediatric Surgery deals with surgical problems of foetus, neonate and children up to 18 years of age. Many of the patients are with congenital deformities with unique individuality and their management also needs individualization providing unique opportunity of learning, thinking & research for learners. Paediatric Surgery department was established in the IPGM&R (Institute of Post-graduate Medicine Research) in 1985 with 4 beds to provide surgical care for this group of patients. Now it has 39 beds. Paediatric Surgery has all divisions like adult in addition to foetal and neonatal surgery.

The Department of Paediatric Surgery provides all types of surgical services to the paediatric patients irrespective of sub specialties since 1985 in our country. The department also took the responsibility of teaching and training medical graduates who are interested to build up their carrier in Paediatric Surgery. In the present context, the department expanded its service facilities both in out patients and indoor by developing departmental skilled manpower. We have every day out patient follow up clinic, counseling clinic for antinatally detected congenital anomalies in addition to paediatric surgery outdoor.

The number of patients are increasing day by day both in the outpatient department and also in the indoor due to increasing professional awareness among the medical practitioners and the general populations. In the paediatric Medicine more specific, specialized services are provided in the name of neonatology, paediatric nephrology, paediatric gastroenterology, paediatric haemato-oncology, paediatric respiratory medicine, paediatric neurology and paediatric cardiology in addition to general paediatric medicine. Our neighboring countries like India, Pakistan and Sri Lanka have already established the sub specialties in paediatric surgery parallel to paediatric medicine sub-specialties like Paediatric Urology, Paediatric Surgical Oncology, Paediatric Plastic surgery, Paediatric Chest surgery, Paediatric Neurosurgery, Paediatric Orthopedics, Neonatal Surgery and Foetal Surgery. We are in process of developing such specialties. Meanwhile all these sub-specialties are dealt by all the units of this department.

Now the world is a global village, everybody knows what happens around regarding their medical or surgical problems, what are the treatment options and what are the probable modalities. So it is our moral obligation to expand our paediatric surgical services according to global medical guideline to fulfill our professional expectation and people's desire. BSMMU is the only medical university of our country which provides service, teaching, training and research in medical profession. Residency programme has been implemented at BSMMU to modernize medical education, training and patients care like developed world. This curriculum has been prepared to fulfill this vision & mission for post-graduate students of Paediatric Surgery.

Background

- Curriculum of the undergraduate medical education in Bangladesh has already undergone changes to match the contemporary trends with the modern medical education.
- The postgraduate curriculum therefore also needs similar revisit and changes that are due in the light of
  - **changes in the healthcare needs,**
  - **changes in the healthcare delivery technology**
  - **changes in the educational needs and trends**
- In this residency program we introduce simultaneous teaching and training of the residents giving more emphasis on **outcome based, supervised training** where different **competencies** acquired by the trainees are being focused.
  - **The competencies are –**
    1. Health advocacy
    2. Clinical
    3. Communication
    4. Professional
    5. Scholarship
    6. Collaborative
    7. Management

Educational Mission

- **To train and educate the medical graduates to become**

  Clinically Competent, Professionally-driven, Humanly oriented and Self-motivated Practitioners in Paediatric Surgical Speciality of healthcare with Scholarly Disposition and ability to think Critically, Communicate, Advocate & Respond Individually as well as Collectively, Compassionately and Realistically to the Comprehensive Paediatric Surgical Healthcare needs of the Individuals, Families and the Community and contribute to Health Development of the Nation and Beyond.

Objectives of the Curriculum: To produce

1. Clinically competent surgical specialists capable of dealing with emergency as well as elective paediatric general problems particularly with context to the conditions prevailing in Bangladesh with standard outcome by using contemporary knowledge and technology of the discipline.

2. Communicators with awareness and ability for the dynamic interaction between physicians and their patients, patients' families, care providers and all others in the care system for successful outcome of care as well as for achieving good health.

3. Team members, skilled to work in a team of care providers as well as leading a team whenever necessary to guide the entire care effort to the benefit of the patients.

4. Effective managers having knowledge and understanding of the current context of healthcare in the contemporary language; having expertise in identifying, mobilizing and managing resources; having capacity to organize tasks with quality and safety assurance; having proficiency of incorporating skills and knowledge needed to organize sustainable practice of the discipline and function effectively as a physicians to achieve optimum health outcome of the clients.

5. Health Advocates with ability to recognize various determinants of health in the community served, identify relevant greater public health issues, negotiate with stakeholders to successfully influence healthcare systems for a positive health outcome.

6. Scholars, conversant with the contemporary issues and trends in research and practice; demonstrating interest in the concepts of lifelong-learning / CPD, critical appraisal, research literacy and teaching others and maintaining ethical obligation to quality and continuous development of the self and the system.

7. Professionals, committed to orient services to the needs and expectations of the society, updated to address controversies and confusions, obligated for profession-led regulation and upholding service above self.

Overview of the curriculum

Paediatric Surgery is that branch of medicine that deals with the diseases, trauma and malformations of childhood years (fetal period to eighteen years).

- Consultant surgeons working in this area of clinical practice will have undergone a specific training programme to furnish the knowledge, skills and professional attitudes necessary for dealing with children and their families.

- At present the majority of specialised children's surgery is performed in designated children's hospitals, or in paediatric surgical units within larger hospitals. In these settings, teams of health professionals led by consultant paediatric surgeons provide the necessary services to diagnose, treat and support the rehabilitation of children with various ailments.

- The routine workload has a very general focus with most consultants developing experience and skills across the breadth of surgery. To facilitate this, the training is broadly based and comprehensive.

- As a consequence of the breadth and variation in complexity of conditions seen and dealt with in the speciality, there are wide variations in the nature of Paediatric Surgical practice across the country.

- Most consultants will also have a commitment to an emergency workload though the nature of delivery of that will vary between different units.

- There is an increasing trend for consultants to develop further specific expertise in areas of special interest which include:

    - Neonatal Surgery
    - Urological Surgery
    - Hepatobiliary Surgery
    - Gastrointestinal Surgery
    - Oncological Surgery

    Other Possible Subspecialities:

    1. Plastic surgery
    2. Orthopedic surgery
    3. Neurosurgery

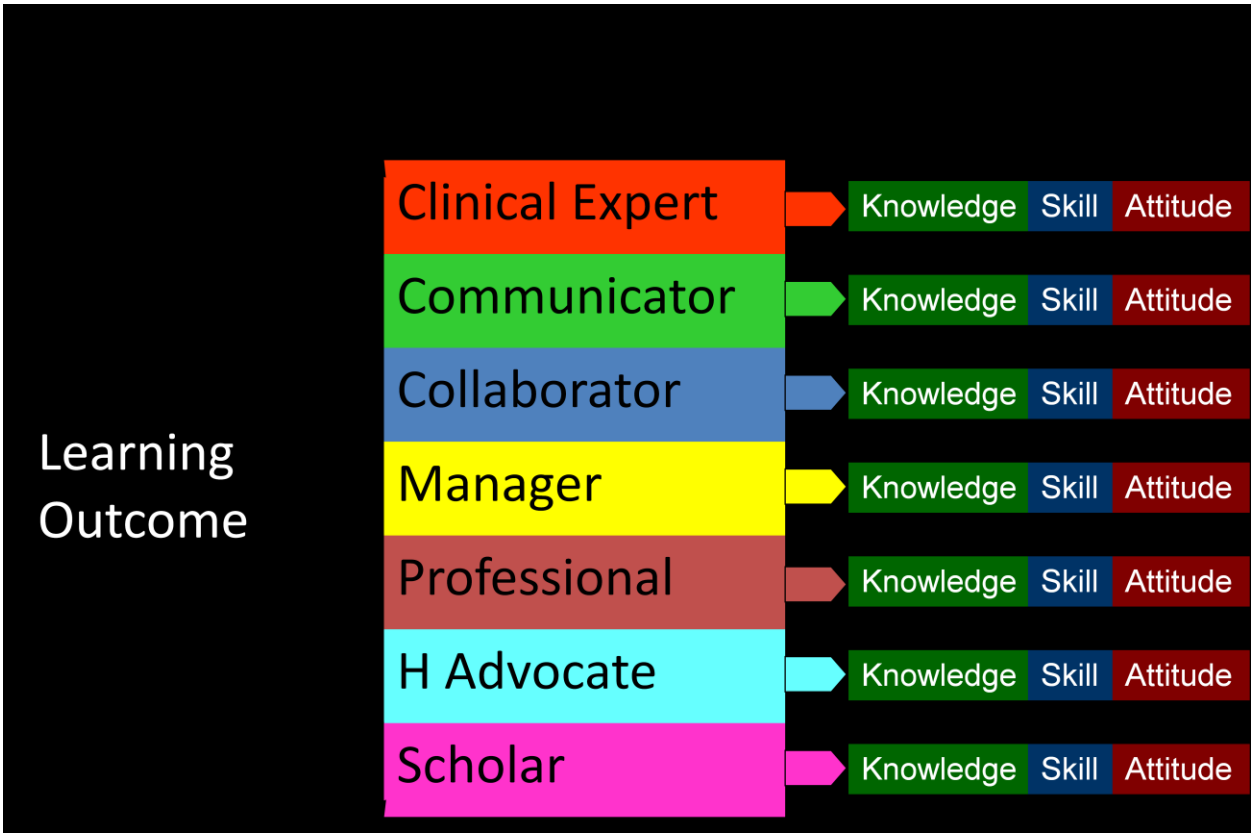
Steps of Learning Content

Step One : Setting the Learning Outcome or Identifying the Learning Issues

Step Two : Identifying the Roles to be played in Demonstrating the Learning Outcome

Step Three : Identify Knowledge, Skill and Attitude Components to be achieve in demonstrating the Competencies

A role model of learning



A role model of Specific learning issue

Outline the Postoperative (PO) analgesic

Training Curriculum of Paediatric Surgery

Curriculum based Paediatric surgical training should at least 6-12 months comprise the different modules for the student selected for training certificate only/ student of MS/ FCPS in Paediatric Surgery.

The trainee must take a clear role in the paediatric surgical team managing outdoor and ward based children and their parents and careers under supervision, including the management of acute paediatric surgical admissions. They will need to be able to take part in an outpatient clinic and see patients with their trainer / consultant available.
Therefore the trainee in the beginning in addition to the generic competencies for all surgeons, it is necessary to address the specifics of developing interest in paediatric surgery during these years. This means spending 6-12 months in paediatric surgery which gives trainees access to the appropriate learning opportunities. Also by the time a trainee have to be familiar with the operating room environment both with respect to elective and emergency cases.
Trainees must attend MDT and other Departmental meetings and ward rounds, prepare patients for elective operating lists (including inpatient, day-case and endoscopy), and actually perform some surgery under appropriate supervision. They must manage all patients in a paediatric ward environment as part of the paediatric care team, preoperatively and post operatively. This includes recognizing and initiating the management of common complications and emergencies, over and above those already laid out in the generic curriculum, particularly in different module.

The aim of this training is to allow the trainee to continue to develop the skills knowledge and attitude required to practice Paediatric Surgery in the Bangladesh. Trainee will build on the basic skills and competencies achieved in the initial stage of the programme, gaining exposure to the more specialized areas of practice. It is expected that the trainees will continue to build their clinical experiences and be able to demonstrate competent practice in the operations detailed at the end of training.
The curriculum goals are presented in a modular fashion for ease of reference and recording of achievement rather than as a suggested teaching package. In some centres the trainees may work for firms in which there is an element of specialization (paediatric urology is a prime example of this), but in other units there may be a more widespread range of experience to be obtained. There will obviously be areas of duplicate coverage and again this curriculum should be viewed as a framework to aid understanding rather than as a proscriptive document. The different sections will contain a mixture of information on relevant conditions, symptom patterns and associated surgical operations. This is an attempt to represent the variety of clinical practice. Overall these goals outlined are simply guides to progress and should be used by trainees, trainers and Programme Directors to help plan rotational placements to ensure a full breadth of training. Acquisition of competencies in Paediatric Urology will depend on what year and when the trainee exposed to this aspect of Paediatric Surgery and in which centre the trainee gets this exposure. If the trainee wishes to acquire special skill in the sub speciality of paediatric surgery like Paediatric Urology it is recommended that the trainee applies for one of the subspeciality posts in the designated center.
The following modules are included:

- Gastrointestinal
- Neonatology

- General Urology
- Thoracic
- Oncology
- Endocrine
- Surgical Disciplines
- Research and Audit

The purpose of training in the speciality of paediatric surgery is to produce surgeons competent to work as consultant paediatric surgeons in home and abroad.

This includes:

1. Competence to manage unselected paediatric surgical emergencies and able to diagnosing, assessing and treating or referring on as appropriate.

2. Competence in the management of paediatric surgical patients presenting with a range of symptoms and elective conditions as specified in the curriculum.

3. Competence to manage an additional range of elective and emergency conditions by virtue of appropriate training and assessment opportunities obtained during training.

4. Professional competences as specified in the curriculum and derived from Good Medical Practice.

The Training Pathway

A. Eligibility

Candidates eligible for curriculum based training in Paediatric surgery are**:**

1. Successful completion of part I in MS Paediatric Surgery/ Phase A of resident in Paediatric Surgery
2. Successful completion of assessment of preli in FCPS Paediatric Surgery.
3. After completion of FCPS/MS in general surgery
4. Candidates who take this training in Paediatric Surgery will be recognized maximum for duration of 1 year in paediatric surgery and for 6 months in other surgical speciality irrespective of duration.

B. The Scope and Standards of Paediatric Surgical Practice during training

Curriculum based structure training is a structured training is a step ladder procedure and the trainee must proceed step by step through a learning curve.

On completion of the training programme including those pursuing an academic pathway, will be expected to have completed the competence based curriculum successfully. He /She become Clinically Competent, Professionally-driven, humanely oriented and Self-motivated Practitioners in Paediatric Surgical Speciality of healthcare with Scholarly, Disposition and ability to Think Critically, Communicate, Advocate & Respond Individually as well as Collectively, Compassionately and realistically to the Comprehensive Paediatric Surgical Healthcare needs of the Individuals, Families and the Community and contribute to Health Development of the Nation and beyond.

This includes the following broad areas:

Professional Behavior and Leadership Skills

This is defined in detail in the curriculum professional behavior and leadership skills but there is particular emphasis on:

- Understanding the specific features of management of children's health and illness
- Appropriate professional behaviors in dealing with children and families
- The ability to both, lead and work within the relevant teams

General Paediatric Surgery

- Assessment and management of children with acute and chronic abdominal pathology
- Assessment and management of trauma (including APLS certification)
- Assessment and management of children with abdominal wall hernia
- Long term management of those children presenting with congenital neonatal conditions
- Assessment and management of children with oncological diagnosis

Neonatal Surgery

- Assessment and management of neonates with acute abdominal pathology
- Assessment and management of neonates with abdominal wall defects
- Assessment and management of neonates with major congenital anomalies e.g. Hirschsprung's disease Anorectal malformations, Oesophageal Atresia, Intestinal Atresia etc.
- Assessment and management of pyloric stenosis

Paediatric Urology

- Assessment and management of children with urinary tract infection
- Assessment and management of children with both upper and lower urinary tract abnormalities e.g. exstrophy Epispadias complex.
- Assessment and management of congenital abnormalities of external genitalia in both sex e.g. hypospadias, vaginal Atresia.
- Assessment and management of children with bladder dysfunction
- Assessment and management of children with urogenital malignancies.

Areas of Special Interest

Neonatal Surgery

This is defined as the surgery of infants up to 44 weeks post conceptual age (gestational age + postnatal age). With the availability of antenatal diagnosis, neonatal surgical care also includes antenatal counseling of parents and other health professionals. Neonatal surgery is an essential component of paediatric surgery and contributes significantly to the emergency workload of any general paediatric surgeon.

Urological Surgery

Paediatric urology is the surgical management of congenital and acquired anomalies of the genitourinary system in neonates and children. It forms a major component of the paediatric surgical workload.

Paediatric Urology officially recognized as a sub-speciality by university. The majority of the work is elective. The Paediatric Urological emergency and endo-urology are also included during the training. All paediatric surgeons must undertake some training in paediatric urology which comprises a significant proportion of the post graduate Exam in Paediatric Surgery.

Hepatobiliary & Gastrointestinal Surgery

Hepatobiliary and Gastrointestinal surgery is a major component of general paediatric surgery with the majority of paediatric surgeons involved to some extent. The division into upper and lower GI is less distinct than in adult general surgery but there is sub-specialization with inflammatory bowel disease being managed by a smaller number of surgeons. Antireflux surgery provides a steady workload but more complex procedures such as gastro-oesophageal disconnection are generally limited to a small number of enthusiasts.

Oncological Surgery

Paediatric oncological surgery should be exclusively managed in tertiary centers by those trained and having expertise in this specific branch. It is likely to be the full time or part time special interest of 1 or 2 surgeons within each centre. It is expected that all paediatric surgical trainees will cover this aspect of paediatric surgery but those with a special interest may have to plan targeted training to reach the level of expertise and confidence appropriate for a consultant.

Laparoscopic Surgery

Laparoscopic and, to a lesser extent, thoracoscopic surgery, are now firmly established in all Paediatric Surgical Training Centers. The minimal access approach can now be regarded as one way to perform a wide range of operative procedures in Paediatric Surgery. Established laparoscopic surgical techniques and operative procedures as key skills for all Paediatric Surgical trainees.

Thoracic Surgery

Some thoracic surgery, in some centers, is undertaken by Cardiothoracic Surgeons. In many centers, this work is undertaken by Paediatric Surgeons. Conditions include congenital cytic adenomatous malformation of the lung, congenital lobar emphysema, empyema and surgery for oesophageal atresia.

Academic Surgery

Though the acquisition of academic skills and experience form an integral part of the training in Paediatric Surgery

Contents of Training curriculum

On completion of the training programme, the Paediatric Surgical Trainee will be expected to have demonstrated competence in the following areas:

Generic

- Understanding the specific features of the management of children's health and illness
- Self directed learning
- Ability to teach and guide
- Appropriate professional behaviors in dealing with children and families
- The ability to both lead and work within appropriate teams
- The ability to participate in antenatal diagnosis and counseling
- Expected to be competent with relevant pediatric medical problems

General Paediatric Surgery

- Assessment and management of children with acute abdominal pathology
- Assessment and management of trauma
- Assessment and management of children with abdominal wall herniae
- Long term management of those children when needed.
- Assessment and management of children parents with oncological diagnoses

Neonatal Surgery

- Assessment and management of neonates with acute abdominal pathology
- Assessment and management of neonates with abdominal wall defects
- Assessment and management of neonates with major index conditions e.g. Hirschsprung's disease, anorectal malformations, oesophageal atresia
- Assessment and management of pyloric stenosis
- Assessment and management of ante natal diagnosed surgical cases

Paediatric Urology

- Assessment and management of children with urinary tract infection
- Assessment and management of children with both upper and lower urinary tract abnormalities (congenital & acquired)
- Disorders of sex development and congenital diseases of external genitalia
- Assessment and management of children with bladder dysfunction
- Assessment and management of urological malignancy in children.

Assessment system for evaluation of the training

1. Assessment type:

Assessment type	Subject
DOPS a selection of types and numbers of each type according to learning agreements	Insertion of a suprapubic catheter Circumcision Suction rectal biopsy Manual evacuation of stool EUA Rectum Anal stretch Abscess drainage Herniotomy Testicular torsion
Case Based Discussion	four per six months of attachment
CEX	History taking from a child and their carers Examining a child Taking consent
PBAs	Appendicectomy Inguinal herniotomy Pyloromyotomy Surgery for hydrocele Repair of umbilical hernia
Training Supervisors report	Evidenced by the above WPBAs

2. Assessment component:

Clinical Skills	**Technical Knowledge & Clinical** **Expertise•** Capacity to apply sound clinical knowledge & judgment & priorities clinical need • Demonstrates appropriate technical and clinical competence and evidence of the development of diagnostic skills and clinical judgment • Validated logbook documentation of surgical exposure to date • Shows aptitude for practical skills, e.g. hand-eye co-ordination, dexterity, visuospatial awareness • Attendance at relevant courses, e.g. ATLS, Basic Surgical Skills or equivalent,
Academic / Research Skills	**Research Skills:** • Demonstrates understanding of the basic principles of audit, clinical risk management & evidence-based practice • Understanding of basic research principles, methodology & ethics, with a potential to contribute to research **Audit:** Evidence of active participation in audit **Teaching:** Evidence of contributing to teaching & learning of others • Evidence of relevant academic & research achievements, e.g. degrees, prizes, awards, distinctions, publications, presentations, other achievements • Evidence of participation in risk management and/or clinical/laboratory research

<table>
<tr><td>Personal Skills</td><td colspan="2">Judgment Under Pressure:
• Capacity to operate effectively under pressure & remain objective In highly emotive/pressurized situations
• Awareness of own limitations & when to ask for help
Communication Skills:
• Capacity to communicate effectively & sensitively with others
• Able to discuss treatment options with patients in a way they can understand
Problem Solving:
• Capacity to think beyond the obvious, with analytical and flexible mind
• Capacity to bring a range of approaches to problem solving
Situation Awareness:
• Capacity to monitor and anticipate situations that may change rapidly
Decision Making:
• Demonstrates effective judgment and decision-making skills
Leadership & Team Involvement:
• Capacity to work effectively in a Multi-Disciplinary Team
• Demonstrate leadership when appropriate
• Capacity to establish good working relations with others
Organization & Planning:
• Capacity to manage time and priorities workload, balance urgent & important demands, follow instructions
• Understands importance & impact of information systems</td></tr>
<tr><td>Probity</td><td colspan="2">Professional Integrity:
• Takes responsibility for own actions
• Demonstrates respect for the rights of all
• Demonstrates awareness of ethical principles, safety, confidentiality & consent
• Awareness of importance of being the patients' Advocate, clinical governance & responsibilities of the hospital Staffs'</td></tr>
<tr><td>Commitment To Speciality</td><td>Learning & Development:
• Shows realistic insight into paediatric surgery and the personal demands of a commitment to surgery
• Demonstrates knowledge of the paediatric surgical training programme & commitment to own development
• Shows critical & enquiring approach to knowledge acquisition, commitment to self-directed learning and a reflective/analytical approach to practice</td><td>Extracurricular activities:
• Achievements relevant to paediatric surgery, including elective or other experience
• Attendance at, or participation in, national and international meetings relevant to paediatric surgery</td></tr>
</table>

Pre-requisites for admission

1. Admission is open to government, private and overseas candidates.
2. Candidates for MS course must have –
    a. MBBS degree or its equivalent recognized by the Bangladesh Medical and Dental Council and Bangabandhu Sheikh Mujib Medical University.
    b. One year internship
    c. Completion of one year after internship
    d. BMDC registration
3. Candidates serving in BCS (Health) cadre, Adhoc Govt. appointment, Govt. Projects and Autonomous bodies should apply through proper channel even in advance copy.
4. Candidates serving in BSMMU can apply for admission into MS (Paediatric Surgery) course. They will have to apply through proper channel and the rules of the university will be applicable for them.
5. The applicants should not be above 45 years of age
6. Written admission test will be MCQ based on Basic Medical Sciences (Anatomy, Pharmacology, Physiology, Biochemistry, Pathology, Microbiology, Clinical pathology etc.) & faculty based questions. Time: 180 minutes, total marks: 200.
7. The prescribed form is to be collected from Pubali Bank, Shahbagh Avenue Model Branch, Dhaka on payment of Tk. 2000/- (non-refundable) to the BSMMU Examination fund, SB A/C no. 136920 (Yellow form for Govt. & Autonomous candidates, Green form for BSMMU candidates, White form for Private candidates, Pink form for Phase-B and Blue form for foreign candidates.

Selection Procedure:

1. Admission test will be conducted by BSMMU for the selection of the candidate (both from home and overseas).
2. Written admission test will be taken on MCQ type questions set on basic medical science and surgical science.
3. A committee of BSMMU will select foreign student.

Number of seats

1. Number of seats will be 6 (six) persons each year

Venue of the Course

Department of Paediatric Surgery
Bangabandhu Sheikh Mujib Medical University
Shahbagh, Dhaka-1000

Duration of the course

1. Total – 5 (Five) academic years
2. The course will be divided into 2 (two) phase
    a. Phase – A (2 years)
    b. Phase – B (3 years)

Regulations for the course:

A. Title of the course : Master of surgery (Paediatric Surgery)

B. Date of commencement : January of each year

C. Phase – A

- The duration of Phase – A will be 2 years
- The course will include basic subjects related to Paediatric Surgery, Principles of surgery & other allied subjects.
- The 2 years period will be divided into 8 blocks; each block consists of 3 months. Students will be placed in Paediatric Surgery Department.

D. Phase – B

- The duration of Phase – B will be 3 years
- The candidate will be promoted to Phase – B on completion of Phase – A examination.
- The course will include Paediatric surgery proper and other subjects.
- The 3 years period will be divided into 3 Blocks; each block consists of 1 year. Student will be placed in Paediatric Surgery Department during this period. After end of each block there will be an assessment.

Curriculum of Phase A

Outline for Phase-A

Duration - 2 years

- Training Component
  - Rotation in Parent and Surrogate Departments
- Academic Component
  - **Generic** (Communication, Ethics, Health Behavioural Science, Epidemiology, Health Economics, Healthcare Management, Healthcare Research and Statistical Methods, Medical Education, Medical Humanities and Others)
  - **Discipline Specific** (Applied Basic Science, Clinical Science)
- Maintenance of log book
- Maintenance of Portfolio

Components

- Clinical Components - to be taught in parent & surrogate departments
- Academic Components – to be taught in by Subject Matter Specialists in the respective Subjects

Content Outline of Phase A

A. Paediatric Surgery related broad based applied Basic Medical Sciences

a. **Anatomy**
b. **Physiology**
c. **Pathology**
d. **Microbiology & Immunology**
e. **Pharmacology**

B. Paediatric Surgical Patients management related events

C. Clinical Methods (Knowledge part)
D. Emergency presentations
E. Common symptom-based Presentations
F. Problem solving skill (History, Physical exam)
G. Planning Investigations
H. Data interpretations
I. Clinical Reasoning skill/ Clinical judgment
J. Synthesis of information/ interpretation of Medical Literature
K. System specific knowledge
L. Ability to judicious diagnostic tests
M. Management skill and professional behavior
N. Disease prevention

Time Table

Day	8-9	9-10	10-11	11.30-12.30	12.30-13.30	13.30-14.30
Saturday	**Morning Session**	**Lecture**	**Clerkship/ Tutorial/ Bed side discussion**	**OPD / Diagnostic clinic / MD clinic**		**OPD**
Sunday	**Morning Session**	**Lecture**	**Clerkship/ Tutorial/ Bed side discussion**	**OPD / Diagnostic clinic / MD clinic**		**Medical Humanities**
Monday	**Morning Session**	**Lecture**	**Clerkship/ Tutorial/ Bed side discussion**	**Seminar**		**Seminar**
Tuesday	**Morning Session**	**Lecture**	**Clerkship/ Tutorial/ Bed side discussion**	**Preoperative/ Therapeutic Clinic**		**Medical Humanities**
Wednesday	**Theatre/ Skill Training / Clerkship**					
Thursday	**Theatre/ Skill Training / Clerkship**					

Overview of Phase A

They will have attained the knowledge, skills and behavior as defined in the following modules of the syllabus for phase A

Basic sciences Competencies

Module 1

Applied Basic Science Knowledge relevant to paediatric surgical practice

- o Anatomy
- o Physiology
- o Pharmacology - in particular safe prescribing
- o Pathological principles underlying system specific pathology
- o Microbiology
- o Diagnostic and interventional radiology

Objectives:

To acquire and demonstrate underpinning basic science knowledge appropriate for the practice of surgery, including:-

- o Applied anatomy: Knowledge of anatomy appropriate for surgery
- o Physiology: Knowledge of physiology relevant to surgical practice
- o Pharmacology: Knowledge of pharmacology relevant to surgical practice centred around safe prescribing of common drugs
- o Pathology: Knowledge of pathological principles underlying system specific pathology
- o Microbiology: Knowledge of microbiology relevant to surgical practice

Anatomy:

Radioanatomy:

- Knowledge of the principles, strengths and weaknesses of various diagnostic and interventional imaging methods

Applied anatomy:

- Development and embryology
- Gross and microscopic anatomy of the organs and other structures
- Surface anatomy
- Imaging anatomy

This will include anatomy of thorax, abdomen, pelvis, perineum, limbs, spine, head and neck as appropriate for surgical operations that the trainee will be involved with during core training .

Physiology:

General physiological principles including:

- Homeostasis
- Thermoregulation
- Metabolic pathways and abnormalities
- Blood loss and hypovolaemic shock
- Sepsis and septic shock
- Fluid balance and fluid replacement therapy
- Acid base balance
- Bleeding and coagulation
- Nutrition

This will include the physiology of specific organ systems relevant to surgical care including the cardiovascular, respiratory, gastrointestinal, urinary, endocrine and neurological systems.

Pharmacology:

- The pharmacology and safe prescribing of drugs used in the treatment of surgical diseases including analgesics, antibiotics, cardiovascular drugs, antiepileptic, anticoagulants, respiratory drugs, renal drugs, drugs used for the management of endocrine disorders (including diabetes) and local anaesthetics.
- The principles of general anaesthesia
- The principles of drugs used in the treatment of common malignancies

Pathology:

General pathological principles including:

- Inflammation
- Wound healing
- Cellular injury
- Tissue death including necrosis and apoptosis

- Vascular disorders
- Disorders of growth, differentiation and morphogenesis
- Surgical immunology
- Surgical haematology
- Surgical biochemistry
- Pathology of neoplasia
- Classification of tumours
- Tumour development and growth including metastasis
- Principles of staging and grading of cancers
- Principles of cancer therapy including surgery, radiotherapy, chemotherapy, immunotherapy and hormone therapy
- Principles of cancer registration
- Principles of cancer screening
- The pathology of specific organ systems relevant to surgical care including cardiovascular pathology, respiratory pathology, gastrointestinal pathology, genitourinary disease, breast, exocrine and endocrine pathology, central and peripheral, neurological systems, skin, lymphoreticular and musculoskeletal systems

Microbiology:

- Surgically important micro organisms including blood borne viruses
- Soft tissue infections including cellulitis, abscesses, necrotising fasciitis, gangrene
- Sources of infection
- Sepsis and septic shock
- Asepsis and antisepsis
- Principles of disinfection and sterilization
- Antibiotics including prophylaxis and resistance
- Principles of high risk patient management
- Hospital acquired infections

Imaging:

- Principles of diagnostic and interventional imaging including x-rays, ultrasound, CT, MRI. PET, radio nucleotide scanning

Clinical competencies

Module -2

Every student who enter in to this competence based in course training in paediatric surgery they have supposed to attain the knowledge, skills and behavior as defined in the following (paediatric surgery specific) modules of the curriculum:

1. Basic science

- To understand the basic anatomy that surgeons will encounter during the management of children and the embryology related to congenital anomalies.
- To understand the normal physiological processes at different ages.
- To understand the effects of disease and trauma on these physiological processes
- To understand surgical pathology that can affect children at different ages.

2. Child with abdominal pain

- To be able to assess and initiate management of a child presenting with abdominal pain including appropriate communication with relevant family or carers
- To be able to assess and initiate management of a child presenting with intussusception including appropriate communication with relevant family or carers

3. The vomiting child

- To be able to assess and initiate management of a child presenting with vomiting including appropriate communication with relevant family or carers

4. Trauma in children

Appropriate communication with relevant family or carers

5. Child with groin conditions

- To be able to assess and initiate management of a child presenting with groin pathology (including undescended testis, hernia, hydrocele and painful swellings of the genitalia) including appropriate communication with relevant family or carers

6. Abdominal wall pathology

- To be able to assess and initiate management of a child presenting with abnormalities of the abdominal wall (including umbilical hernia, supra-umbilical hernia and epigastric hernia) including appropriate communication with relevant family or careers.

7. Paediatric urology

- To be able to assess and initiate management of a child presenting with abnormalities of the urinary tract (including urinary tract infection) including appropriate communication with relevant family or carers

8. Child with Constipation

- To be able to assess and initiate management of a child presenting with constipation including appropriate communication with relevant family or careers

9. Head or neck swelling

- To be able to assess and initiate management of a child presenting with a swelling of head or neck including appropriate communication with relevant family or carers

10. Emergency paediatric surgery

- To be able to assess and initiate management of a child presenting with a superficial abscess including appropriate communication with relevant family or careers
- To be able to assess and initiate management of a child presenting with an in growing toe-nail including appropriate communication with relevant family or careers
- This distinguishes the anatomical and clinical features which makes the management of children special.

Clinical Component

To acquire broad based clinical competencies in the Paediatric Surgery related problems that belong to other Specialities .The students are sent to the surrogate departments with a prefixed outcome. The total two years time are segmented into eight blocks. The first and last block the residents are placed in the department of Paediatric Surgery. Initially they are placed to orient themselves with the parent department and at the last they will remain in the parent department for the final examination.

- **Parent block**
  - Inductive phase
  - Preparatory Phase
- **Surrogate blocks**
  - **Department of Paediatrics**
    - General Paediatrics
    - Neonatology
    - Paediatric Nephrology
  - **Department of Surgery**
    - General Surgery
    - Colorectal Surgery
    - Hepatobiliary Surgery
    - Plastic Surgery
  - **Department of Urology**
  - **Department of Neurosurgery**
  - **Department of Orthopaedics**

Different Block with duration for broad-based speciality

Block	Department	Speciality	Duration (Months)
1.	Department of Paediatric Surgery	Paediatric Surgery	3 months
2.	Department of Paediatrics	General Paediatrics	1 month
		Neonatology	1 month
		Paediatric Nephrology	1 month
3.	Department of Surgery	General Surgery	3 months
		Colorectal	1 month
		Hepatobiliary	1 month
		Plastic and Reconstructive	1 month
4	Department of Urology	Urology	3 months
5	Department of Neurosurgery	Neurosurgery	3 months
6	Department of Orthopaedic	Orthopaedic Surgery/ Traumatology/ emergency	3 months
7	Department of Paediatric Surgery	Preparatory Block	3 months

Rotation Schedule for Phase – A

March	April	May	June	July	August	September	October	November
Parent Block			General Paediatric	Neonatology	Paed. Nephrology	General Surgery		

December	January	February	March	April	May
Colorectal	Hepatobiliary	Plastic Surgery	Urology		

June	July	August	September	October	November	December	January	February
Neurosurgery			Orthopaedic Surgery			Parent Block (Preparatory Block)		

System of End- block assessment (EOBR)

Category of assessment	Assessment Scale (Score/ Grade)	Score/Grade Achieved	
Written examination	Total marks 50		
Clinical examination	Total marks 100		
Logbook Assessment	**Complete**: 80-100% if the activities/ Task were Completed Satisfactorily **Recoverable:** 60%-79% completed satisfactorily **Irrecoverable:** <60% completed satisfactorily		
Portfolio Assessment	**Up to date: 80-100%, complete and satisfactory** **Deficient: <80% of the desired contents is complete; needs to revise the contents**		
Competency rating	**Average Rating; Scale: 1 to 10 (EOBR forms)**	Clinical competency	
		Communication Skills	
		Scholarship	
		Profession	

Applied Basic Science component

Topic in Anatomy

General objective of anatomy:

At the end of the completion of the block the student will be able to understand the surgical anatomy and embryological basis of the developing fetus, anatomy of a newborn, infant & child.

1. General Anatomy

Contents	Learning Objectives
• Basic structure of skin, fascia, muscle, joints, ligament, bursae, synovial sheath, blood vessels, lymphatic system, nervous system, serous membranes, bone cartilage of age sex, and race • Change on different structures different pathological conditions e.g. infection, inflammation, trauma benign and malignant lesion. • Co-relation of radiologic findings with the basic structure both in normal and pathological conditions.	• Student will be able to understand and correlate the pathophysiological change of the basic structures in clinical practice.

2. Regional anatomy – functional and clinical aspects:

Thorax

Contents	Learning Objectives
• General Anatomy of o Structure of the thoracic wall o Pleura and supraplural membrane o Inter costal vessels, nerves & muscles o Diaphragm, trachea, lungs, heart and oesophagus o Internal thoracic artery and vein o Lymphatic drainage of the thoracic wall o Position of great vessels o Radiological identification and co-relation of the thoracic structure in different disease condition like, Kyphosis, Scoliosis, Situs inversus, diaphragmatic hernia, tracho-oesophageal fistula, congenital diaphragmatic abnormality and congenital cardiac abnormality. • Lung structure, function &	• Student will be able to understand how the thoracic wall protect and ensures the physiological functions of the life sustaining organs – lungs, heart, major blood vessels and the upper abdominal viscera. • Consequence of blunt trauma and penetrating wound • Congenital abnormalities of the chest wall.

regulation o Structural changes of respiratory tract with age pathological alteration in hyaline membrane disease and pulmonary hypertension.	

The abdomen

Contents	Learning Objectives
Umbilical Region • Development sequence in the formation of umbilicus • Variations of umbilical ring and the umbilical fascia. • Anatomical basis of patent urachus/ patent vitelo-intestinal duct.	Student will be able to • Identify umbilical vein during umbilical catheterization, separated the umbilical structures during repair of umbilical hernia/ PID/ VID.
The anatomical entities of the Groin • Superficial fascia • Distribution in male • Fascia Camper • Fascia Scarpa • Extension of deep part/ Buck's fascia/ dartos fascia/ Collie's fascia • Space formed by the superficial fascia/ perineal cleft/ superficial perineal pouch.	Student will able to – • Understand and explain the abnormal location of ectopic testis, spread/ extravasation of urine after urethral injury/ spread of perineal celulitis.
Aponeurosis of the external oblique muscle • Distribution of the sheath • Arcuate line (Douglas) • Inguinal ligament (Poupart's) • Lacunar ligament (Gilbernet's) • Reflected part of the inguinal ligament (Colle's) • Pectinate ligament (Cooper's) • Hesselbach triangles	Student will be able to • Plan the incision during inguinal hernia operation, groin dissection and pelvic operation.
Conjoined tendon • Definition • Surgical importance • Arch of the transverses abdominis • Falx inguinalis (Healis ligament) • Interfoveolar ligament (Hesselbach's) • Hesselbach's triangle o Boundaries • Reflected inguinal ligament (Colle's) • Iliopubic tract • Transversalis fascia	Student will be able to • Learn formation of inguino scrotum and different potential spaces in this area. • Dissect & identified the inguinal canal, its structure, femoral canal its surgery during repair of inguinal hernia/ inguinal lymphnode dissection.

○ Distribution in inguinal area ○ Space of Bogros ○ Space of Rettius • Iliopectinal arch ○ Surgical importance	
The inguinal canal • Development of canal and change with age • Location of deep and superficial inguinal rings and its change with age • Boundaries/ walls • Contents • Relative position of the contents • Myopectineal orifice • Laparoscopic anatomical view of deep ring • Formation of the spermatic cords its covering and relation of the processus vaginalis with the cord. • Relation of the ileoinguinal nerve and genital branch of the genito-femoral nerve in the inguinal cannel. • Vessels in the spermatic cord. • Round ligament of the uterus in case of female. • Vessels around deep ring and its variation.	Student will be able to • Plan the incision for inguinal herniotomy in different age and also able to dissect the spermatic cord without damaging the vas. • Understand the anatomical basis of different inguinal hernia. Direct, indirect.
Femoral triangle • Boundaries • Contents • Femoral canal and its sheath • Location of the femoral vessels, nerves.	Student will be able to learn • Dissection of femoral hernia sac without damaging the femoral vein.

Contents	Learning Objectives
Abdominal wall and hernias: • General description of the anterior abdominal wall ○ Anterolateral abdominal wall ○ Direction & distribution of muscle. ○ Relation of vessels and nerve ○ Midline portion ○ Location of rectus abdominis muscle ○ Rectus sheath ○ Blood supply of the anterior abdominal wall ○ Anatomy of surgical incisions and their closure. ○ Scrotum, Testis and Epididymis	• The student will be able to co-relate, compare and interpret the clinical findings related to abdomen and its contents for diagnosis, intervention and decision making in clinical practice.

○ Labia majora, minora ○ Posterior abdominal wall ○ Fascial lining, peritoneal lining of the abdominal wall ○ Lympho-vascular pattern of abdomen ○ Abdominal vessel and nerves ○ General arrangement of the abdominal viscera ○ Peritoneum, its reflection and ligaments ○ Gastro intestinal tract, developmental aspect and its rotation, location and canalization. ○ Hepatobiliary system, developmental aspect of its explanation in relation to choledochal cyst, biliary atresia, anular pancreas & their morbid anatomy. ○ Genito-urinary system – review of basic and developmental anatomy of kidney, ureter, bladder, prostate, urethra, male & female genitalia. ○ Adrenal gland – structure and function ○ Structure of gonads ▪ Male – ▪ Female – ○ Their function ○ Sex determination ○ Structure and function of uterus and vagina in relation to menstrual cycle and gestation ▪ Premenarche ▪ Menarche ▪ Post menopause ○ Structure of female breast ▪ Prepubertal, pubertal, pregnant lactational function and regulation ○ Kidney structure, function of acid secretion and its regulation ○ Gastric structure, function of acid secretion and its regulation. ○ Small gut structure and function related to digestion, absorption of carbohydrate, fat, protein, minerals, vitamins and their regulation. ○ Pancreas structure, function and regulation ○ Liver, gall bladder – Structure, function and regulation ○ Colon, rectum, anal canal structure, function, regulation ○ Pena's muscle complex, structure and	

function. o Radiographic Anatomy, radiographic appearance of the normal and pathological condition of abdomen. Stomach duodenum, jejunum, ileum, large gut, biliary duct, urinary tract, kidney.	

Posterior (lumber) body wall:

Contents	Learning Objectives
o **Surgical anatomy of the posterior body wall** ▪ Boundaries of the lumber triangle. ▪ Layers of the posterior body wall from skin to kidney ▪ Distribution of thoraco lumber fascia. ▪ Superior lumber triangle (Grynfeltts) ▪ Inferior lumber triangle (Petit's)	Student will be able to differential superior/ inferior lumber triangle and plan the incision for renal surgery.

Pelvis

Contents	Learning Objectives
• Basic orientation of the pelvis – false pelvis, true pelvis • Structure of the pelvic wall • Pelvic fascia • Pelvic peritoneum • Nerves, vessels and lymphatics of the pelvis • Contents of the pelvic cavity • Pelvic viscera in male • Pelvic viscera in female • Radiological appearance of the bony pelvis and its landmark related to clinical practice.	• Student will be able to identify the pelvic surgery and their relation with genitourinary system at pelvic out let in both normal and disease condition.

The Perineal anatomy

Contents	Learning Objectives
The perineum: • Definition • Anatomical boundaries and landmark of male and female perineum • Different region of perineum in both sex • Location of anal, vaginal and urethral orifices in female child. • Location of the penis, scrotum and anal orifice in male child.	• Student will be able to identify the different types of congenital and recto-perineal and genital malformations by inspection.

Pelvic Diaphragm: • Formation • Arrangement of levator ani and coccygeus, muscle and their nerve supply • Puborectalis sling • Structures passing through the pelvic floor • Structure related to the superficial deep surface • Function of the pelvic diaphragm	• Student will be able to understand the mechanism of continence • Student will be able to identify the levator sling during ano-rectal surgery.
Fascial relations and tissue spaces in the perineum: • Superior and inferior fascia of the levator ani. • Fascia of the obturator internus • Visceral fascia	• Student will be able to understand the spread of infection and spread of malignant disease involving the anus, perianal region & perineum.
Ischiorectal fossa: • Boundaries • Content • Pudendal vessel and nerves	• Student will be able to drain the perineal abscess without damaging the muscles the pudendal vessels and nerve.
Perineal Body: • Location • Formation • Nerve supply • Function	• Student will be able to identify and divide the perineal body during PSARP and repair properly at the end of the operation.
Male Urogenital region • Boundaries • Contents • Lymphatic drainage • Blood supply • Nerve supply	• Student will be able to identify the ambiguous genitalia.
Anal Triangle • Boundaries • Contains • Perianal space • Perineal pouch	•
Radio anatomy of the perineum: • Identification of the ossification center for ileus, Ischemia and pubis. • Identification of bony pelvis in children and neonate • Correlation of radio anatomical planes with the different pelvic viscera i.e. anal canal & different parts of the male urethral.	• Student will be able to classify different type of ARM and urethral obstruction on the basis of radiology.

The upper limbs

Contents	Learning Objectives
• The pectoral region, breast and axillae • Fascial compartment of upper limbs, Arm, forearm • The cubital fossa • The region of the wrist • The hand	

Lower limbs

Contents	Learning Objectives
• Organization of lower limbs • Gluteal region • Femoral triangle • Popliteal fossa • Ankle mortics • The foot • Dermatomes of the limbs • Brachial plexus • Lumbar plexus • Venous and lymphatic drainage of upper and lower limbs. • Developmental aspect of limbs in relation to movements • Important radiological land marks in the limbs	

Scrotum and testis

Contents	Learning Objectives
○ Development and descent of the testis ○ Formation of epididymis and ductus difference ○ Formation and development of the scrotum ○ Layers of the scrotum from superficial to deep. ○ Blood supply and lymphatic drainage of the scrotum.	The student will able to plan the scrotal incisions for Hydrocele and undescended testis.

Neck

Contents	Learning Objectives
• **Triangles of the neck** ▪ Anterior cervical triangle ▪ Boundaries of the triangles ▪ Subdivision of the triangles ▪ Contents of each triangle	Able to learn how to dissect the neck during removal of cystic hygroma, or any of the benign or malignant tissue in this region.
• **Submandibular triangle** ▪ Surgical planes from superficial to deep boundaries and contents of the triangle. ▪ Location of the hypoglossal nerve, mandibular and cervical branches of the facial nerve. ▪ Distribution of the cervical fascia round the submandibular gland. ▪ Relation of the facial vessels crossing the triangle	• Able to plan incision for removal of submandibular gland and lymphnode. • Dissect, identify and manage the fascial vessels, hypoglossal nerve regional nerve. Chordatympanic lingual nerve in the deep part of the gland during dissection of salivary gland
• **Carotid triangle** ▪ Boundaries ▪ Contents ▪ Lymphnode with afferent and efferent vessels	• Able to dissect out the lymphnode/ cystic hygroma, tract of branchial fistula from carotid triangle without damaging the great vessels & respiratory tract.

• **Muscular triangles** ▪ Boundaries ▪ Contents	• Able to identify the thyroid gland lobes from the muscle bed during thyroid surgery
• **Posterior cervical** ▪ Boundaries ▪ Contents	• Able to identify the arrangement of the sternocleido mastoid muscle and its relation with spinal accessory nerve during operation for torticolles.
• **Fasciae of the neck** ▪ Classification ▪ Distribution ▪ Visceral compartments of the neck	• Able to dissect out the different viscera i.e. thyroid, parathyroid and congenital sinus and fistula tracts in the neck without damaging the vital structures in the neck.
• **Arrangement of the cervical lymphnode** ▪ Distribution of afferent and efferent vessels ▪ Right and Left thoracic ducts	• Able to preserve the thoracic duct during neck dissection • Anticipate the consequence of the lymphnode dissection.
• **Thyroid gland** ▪ Embryological path of the discent of the thyroid gland ▪ Capsule of the thyroid gland ▪ Thyroid gland and recurrent laryngeal nerves ▪ Anatomical entities involved in persistent remnants of the thyroglossal duct/ fistula ▪ Foramen cecum ▪ Thyroid nerves with vessels ▪ Hyoid bone and muscles attached to it	• Able to learn to identify and handle the thyroid vessels, preserve the recurrent laryngeal nerve, separate the thyroid without damaging the Crico-thyroid membrane during thyroid surgery.
• **The parotid gland** ▪ Relation of the gland with surrounding structures ▪ Structures traversing the parotid gland.	• Able to plan parotid incision and dissection, identify and preserve the facial nerve during parotid surgery.
• **Branchial cleft, sinus and cyst** ▪ Development branchial arches ▪ Relation and course	• Able to dissect the branchial sinus and cyst up to their root without damaging the nerve and other structures related to it.
• **Anatomy of the trachea** ▪ Anatomical landmark ▪ Blood supply ▪ Lymphatic drainage	• Able to dissect the trachea during trachostomy without damaging jugular venous arch or carotid vessels.
• **Scalp** ▪ Distribution of langer's lines with layers ▪ Blood supply ▪ Lymphatic drainage	• Able to plan incision during removal of cyst drainage of abscess, in the scalp
• **Brain** ▪ Ventricular anatomy ▪ Surface markings of the ventricles ▪ Anatomy of Meninges	• Able to enter the ventricles without damaging the vessels during VP shunt surgery • Able to identify & dissect meningeal layers during surgery for meningoceles

Diaphragm:

Contents	Learning Objectives
○ Developmental basis of different congenital diaphragmatic hernia. ○ Distribution of diaphragmatic muscle and the crura. ○ Different openings of the diaphragm ○ Composition and configuration of the hiatal ring. ○ Nerve supply, lymphatic drainage & Blood supply of the diaphragm. ○ Diaphragmatic mediastinal relations. ○ Structures at or the esophageal hiatus.	Student will be able to identify the vagus nerve, mediastinal pleura, hepatic vein and diaphragmatic pleura during repair of diaphragmatic hernias.

Oesophagus:

Contents	Learning Objectives
○ Development basis of tracho-oesophageal fistula & congenital oesophageal diverticula. ○ Length of oesophagus in different age. ○ Constriction & Curvature of the oesophagus. ○ Relation of the oesophagus, blood supply, lymphatic & nerve supply. ○ Anatomy of the pharyngo-esophageal & gastro-oesophageal junction. ○ Oesophageal hiatus & the crura. ○ Structure of the oesophageal wall	Student will be able to identify & dissect the oesophgus during repair of tracho-oesophageal fistula Heller's procedure, oesophageal replacement and endoscopic procedure.

Stomach:

Contents	Learning Objectives
○ Proximal gastric surgical unit ○ Distal gastric surgical unit • Gastric antrum • Pylorus • First part of the duodenum ○ Relation of the distal gastric unit ○ Gastric wall and ligaments ○ Blood supply of the stomach ○ Lymphatic drainage of the stomach ○ Relation & distribution of the vagus nerve in stomach.	Student will be able to identify the vagus nerve, different part of the stomach during gastric surgery and also able to mobilize the stomach and duodenum.

Duodenum:

Contents	Learning Objectives
○ Development of duodenum, hepatobiliary system and pancrease ○ General description of the duodenum ○ Surgical anatomy of the duodenum ○ Duodenal vascular supply.	Student will be able to understand developmental basis the congenital abnormality of the duodenum and able to mobilize the duodenum during surgical procedures on duodenum, biliary and pancrease.

Pancreas:

Contents	Learning Objectives
○ Development and developmental anomaly of the pancreas ○ General description of the pancreas ○ Parts of the pancreas ○ Pancreatic ducts ○ Duodenal papilla ○ Arterial arc of the pancreas ○ Venous & lymphatic drainage of the pancreas ○ Ectopic and accessory pancreas	Student will be able to – • Explore the pancreas • Dissect the splenic vessels • During surgical procedure for the pancreatic for pseudocyst

Small Intestine:

Contents	Learning Objectives
○ Normal and abnormal development of the small gut & their peritonization & rotation. ○ General description of the small gut and their blood supply. ○ Arterial archade in the mesentry before entering in to the small gut. ○ Anatomy of the Meckel's diverticulum. ○ Surgical anatomy of intussusception.	Student will be able to mobilize and release the intussusception, maintain the arterial arcade during small gut resection & excision of the Meckel's diverticulum.

Appendix:

Contents	Learning Objectives
○ Relation and position of the appendix ○ Meso appendix and its blood supply ○ Histology of the appendix	Student will be able to plan incision for appendectomy and to identify the appendix.

Colon and Ano-rectum:

Contents	Learning Objectives
○ General description of the colon ○ Tenia coli & its surgical importance ○ Relation of the cecum ○ Distribution of vascular archade of the colon. ○ Anatomical distribution of greater and lesser omentum. ○ Transverse & sigmoid musocolon. ○ Different peritoneal recesses and their surgical importance. ○ Peritoneal reflections of rectum & anal canal. ○ Developmental basis of ano-rectal malformation, blood supply, nerve supply, lymphatics and histology. ○ Pelvic diaphragm and continence. ○ Fascial relations and tissue spaces around the ano-rectum. ○ The musculature of the wall of the anal cannel. ○ Lining of the anal canal.	• Student will be able to identify the colon for colostomy, the vascular archade during the resection and anastomosis, mobilize the ano-rectum during pull through procedure. • Able to drain the perineal abscess ischeorectal abscess/ fistula/ any procedure in the surgical anal canal and perianal region.

General Developmental anatomy:

Contents	Learning Objectives
• Historical background • Human evolution • Terms and definition of developmental periods • Significance of study of embryology • Basic process of development ○ Growth, proliferation, differentiation and organization. • Cell division ○ Types, chromosomal anomalies • Fertilization ○ Events, factors influencing the fertilization • Progress ○ 1st week, 2nd weeks, 3rd weeks • Fetal membrane ○ Placenta, Chorion, Amnion, Umbilical cord, Yolk sac • Derivatives of germ layers ○ Ectoderm, endoderm and mesoderm • Twin • Congenital malformation	• Students will be able to understand the normal general human development and general developmental basis of congenital anomalies in clinical practice. •

Special Developmental anatomy and anomalies:

Contents	Learning Objectives
• **Face neck and their associated organs** ▪ Cleft lip ▪ Cleft palate ▪ Orofacial cleft ▪ Congenital sinus, cyst and fistula of the head, neck and face ▪ Pierre-Robin Syndrome ▪ Pott's Syndrome • **Skeletal system and vertibral column** ▪ Meningocele ▪ Meningomyelocele ▪ Spina bifida ▪ Caudal regression syndrome • **Muscular system and Diaphragm** ▪ Diaphragmatic hernia ▪ Eventration • **Upper and lower limb** ▪ Rocker bottom foot ▪ Arthogriphosis multiplex ▪ Syndactyle/ Polydactyle ▪ Amelia, Phocomelia ▪ Short limbs • **Abdominal wall** ▪ Omphalocele ▪ Gastroschisis ▪ Umbilical hernia ▪	Able to describe the development basis of the clinical presentation

• **Digestive system**
  ▪ Malrotation
  ▪ Atresia / Stenosis
  ▪ Congenital intestinal obstruction
• **Coelomic cavity and spleen**
• **Respiratory system**
  ▪ A congenital lung cyst
  ▪ Cystic adenomaotus malformation of the lung
• **Skin and mammary gland**
• **Cardiovascular system**
• ASD/ VSD/ TOF
• **Supra renal gland**
• **Urinary system**
  ▪ Poly cystic kidneys
  ▪ Congenital obs. Uropathy
  ▪ Duplex
  ▪ Bladder exstrophy
• **Male and female genital system**
  ▪ Congenital hernia/ hydrocele
  ▪ Hypospadias
  ▪ Undescended testis
  ▪ Epispadias
• **Nervous system**
  ▪ Hydrocephalus
  ▪ Dandy-Walker syndrome
  ▪ Arnolds-Chiari malformation
• **Eye, Ear & Nose**	

General Histology:

Contents	Learning Objectives

• Definition of common terms,
• Tissue classification
• General organization of living organism
• Epithelium: Structure, classification, functions, pigmented epithelium function
• Connective tissue: Structure
  ▪ Cell
  ▪ Wound substance
  ▪ Composition
  ▪ Fibres
• Classification: Function
	• Students will be able to understand the normal structure and function of basic human tissues and its relation to pathological changes encountered in clinical practice.
	• Students will be able to understand the normal structure and function of human cell and its relation to pathological changes encountered in clinical practice.
	•

Systemic Histology:

Contents	Learning Objectives
Osteology • Bone: Definition, function, microscopic anatomy, classification, ossification, fracture repairs.	Able to describe the developmental basis of the clinical presentation

• Cartilage: Definition, function, complex, difference, microscopic structure & functions development growth regulation. **Myology:** • Muscle tissue: definition, classification, difference, microscopic structure & functions development growth regulation. • Skeletal ▪ Slow muscle fiber ▪ Fast muscle fiber myoneural junction and motor unit, vascular supply • Cardiac muscle: Structure, conducting tissue of heart, development growth, regulation • Smooth muscle: Structure, development, myoepithelium **Angiology:** • Structure & function of different type of blood vessels. • Artery - large, medium and small artery • Arteriole, terminal arteriole, • Capillary – sinusoids • Veins • Vascular patterns and function ▪ Arteriole ▪ End artery ▪ Shunt – types **Nervous tissue:** • Organization structure, types, receptors, neurons, types of neurons and neuralgia • Cells: Structure, function, related to neurotransmission, types of peripheral nerve fibre, types of pain fibres and their function. • Wallerian degeneration • Development, regulation of nervous tissue **Special receptors:** • Neuromuscular spindle • Golgi tendon organ	

Reflex Arc

Contents	Learning Objectives
• Sensory pathways – Somatic/ Autonomic • Motor pathways – Somatic, autonomic in sections at different levels • Pyramidal system • Extra pyramidal system • Cerebral Homunculi • Structure and function of layers of eye ball and its contents • Layers of Retina • Visual pathway • Lesions in visual pathway and clinical effects	Able to describe the development basis of the clinical presentation

Topic in Physiology

General objective of Physiology:

At the end of the block in physiology the students will be able to:

- Understand the normal body functions of fetus, neonate, infants and children and utilize it as a background for clinical decision making.

GENERAL PHYSIOLOGY

Contents	Learning Objectives
• Homeostasis and homeostatic mechanism of the major functional system in different conditions. • The cell and its function. • Cellular receptors.	The students will be able to explain about: • Principles of homeostasis in fetus, neonate, infants & children in different environments. • Structure of cell membrane, various intracellular organalles and their functions. • Genetic control of cell function.

SYSTEMIC PHYSIOLOGY

Haemopoetic system

Contents	Learning Objectives
• Composition of blood and plasma protein. • Function of individual blood cells. • Coagulation, anticoagulating system • Blood transfusion and its hazards. • Foetal circulation	The students will be able to understand • Mechanism of haemostasis, coagulation & haemolytic disorder. • Function of plasma protein, Haemoglobin & different blood cells. • Importance of blood grouping & Rh incompatability, blood transfusion and related problems.

Digestive system

Contents	Learning Objectives
• Movement of gastrointestinal tract • Secretion and regulation different digestive juices • Mechanism of deglutition • Hepatic circulation and function including bilirubin metabolism. •	The student will be able to understand • The general principle of GI function and movement of GIT • Transport, mixing of food with digestive juice. • Can explain the mechanism of deglutition. • Can interpret different liver function test and its clinical importance.

Renal system

Contents	Learning Objectives
• Physiology of kidneys, renal circulation, GFR and their control, urine formation in countercurrent mechanism, renal clearance acidification of urine. • Physiology of micturation • Different electrolyte, its importance & regulation.	The student will be able to • Explain mechanism of formation of urine. • Explain act of micturation in different age and environment. • Describe the role of kidneys in regulation of fluid and electrolyte balance in children. • Can interpret the renal function in different disease condition like, obstructive uropathies, renal failure.

Respiration system

Contents	Learning Objectives
• Mechanism of breathing, gas exchange, respiratory acidosis and alkalosis. • Different types of abnormal respiration. • Respiratory failure, hypoxia, asphyxia, cyanosis. • Respiratory support, options and their complication.	At the end of the course the student will be able to – • Understand and explain the mechanism of respiration in neonate, infant and children. • Explain the respiratory function its regulation and lung function test including blood gas analysis. • Take decision regarding indications of respiratory support.

Cardio vascular system

Contents	Learning Objectives
• Cardiac cycle and events. • ECG, ECHO and their interpretation. • Regulation of heart function. • Cardiac output, venous return and their regulation. • Physics of blood flow and pressure. • Microcirculation and its regulation.	The student will be able to • Explain cardiac function and its regulation. • Describe the causes of shock and the physiological basis and treatment of shock. • Describe regulation of coronary pulmonary and cerebral circulation.

Nervous system

Contents	Learning Objectives
• Organization of nervous system, neuron, synapse, neurotransmitters. • Motor system, sensory system and reflexes. • Physiology of pain conduction. • Regulation of temperature, emotion, fluid intake, hunger and thirst. • CSF formation and regulation	The student will be able to – • Explain organization of nervous system, function, properties of neurons. • Explain the basic mechanism of synaptic and neuromascular transmitters. • Describe the effects of lesions at different levels of CNS. • Explain the neurological basis of reflex mechanism. Specially micturation and defecation reflexes. • Understand the physiology of pain and its regulation.

Endocrine and reproductive system:

Contents	Learning Objectives
Organization of Endocrine glands- • Types, mechanism of action, regulation of secretion, function of different hormones. • Functional disorders of endocrine glands. • Secondary sex characters of male and female. • Sex differentiation and development of reproductive organs.	At the end of the course the student will be able to – • Describe types, general mechanism of action, function and control of secretion of hormones. • Describe hormonal disorders of endocrine glands in relation to ○ Pituitary gland ○ Thyroid and parathyroid gland ○ Adrenal gland

Topic in Pathology

Pathology

After completion of the pathology block, the student will be able to:

- Explain the basic mechanism of disease with that etiology, pathogenesis morphological changes with emphasis on common diseases prevalent in Paediatric Surgery.
- Co-relate between clinical findings and pathological changes.
- Check out investigation plan for diagnosis and follow up of the patients.
- Understand and interpret the laboratory findings and their implication in patients management.

General Pathology

Contents	Learning Objectives
• Cell injury • Cellular adaptation	Student will understand: • Reversible and irreversible injury. • Causes of cell injury. • Cellular swelling and fatty change. • Necrosis and apoptosis. • Types of necrosis and examples. • Morphological changes in necrosis and apoptosis. • Mechanism of different types of necrosis gangrene. • Describe clinical effects of tissue necrosis. • Hyaline changes • Heterotopic calcification
• **Acute Inflammation**	Student will be learn: • Inflammations causes • Sequence of vascular changes • Inflammatory exudates • Mechanism of formation of cellular and fluid exudates. • Inflammatory cells and their functions. • Chemical mediators and their role of different chemical mediators in inflammation • Morphological types inflammation • Describe the local and general clinical features of acute inflammation • Body response in acute inflammation • Complications of acute inflammation. • Fates of acute inflammation
• **Chronic Inflammation**	Student will learn: • Chronic Inflammation • Characteristic features and types of chronic inflammation • Granuloma and classification of granuloma

	with example • Morphological features of tubercular granuloma • Clinical implications of chronic inflammations.
• **Healing and repair**	Student will learn: • Healing, repair and regeneration • Mechanism of primary and secondary wound healing • Differences between healing by first and secondary intention • Local and general factors influencing wound healing • Complications of wound healing
• **Oedema and dehydration** • **Hyperemia and congestion** • **Haemorrhage and shock**	Student will learn: • • Mechanism of inflammatory and non-inflammatory oedema • Various types of oedema a) Cardiac, b) Hepatic, c) Renal, d) Pulmonary, e) Nutritional • Clinical significance of oedema • Mechanism of Hyperemia and congestion • Tissue changes of passive venous congestion in liver, lung and peripheral tissues. • Different types of haemorrhage • Effects of acute and chronic haemorrhage • Compensatory mechanism of acute haemorrhage • Shock • Different types of shock • Pathophysiology of shock with its various stages.

Thrombosis • **Embolism** • **Infarct**	Student will learn: • Pathogenesis of thrombosis • Morphology of thrombus • Mechanism of thrombus formation • Effects of thrombi • Fate of thrombus • Types of emboli • Pathogenesis of pulmonary and systemic embolism and their effects. • Fates of emboli • Pathogenesis of infarction and Common sites of infarction • Morphological changes and fate of an infarct. • Hematological and biochemical changes in myocardial infarctions.
• **Neoplasia, carcinoma, spread of tumour and tumour immunology.** **Radiation injury to normal and tumour tissue**	Student will learn: • Classify tumours • Characteristic features of benign and malignant tumours and carcinoma and sarcoma • Mechanism of spread of malignant tumours • Different carcinogens. • Parameters required for grading and staging of malignant tumours. • Significance of grading and staging • Precancerous conditions • Difference between invasive carcinoma, carcinoma in situ, locally malignant tumours, latent cancer and dormant cancer. • Various methods in the laboratory for diagnosis of cancer. • Principles of histopathological examination, cytological examination, tumour markers and immunocyto/ histochemistry.
• **Medical Genetics**	Student will learn: • Understand the basic concepts of inheritance • Different genetic disorders. • Name cytogenetic, Mendelian and multifactorial disorders. • Basic mechanism of immunological disorders – Hypersentivity, Autoimmune disease, Immunodeficiency • Diseases caused by environmental hazards.

Topic in Microbiology

General objective of Microbiology, Parasitology & Immunology:

At the end of the rotation of the block the student will be able to (understand the) –

Contents	Learning Objectives
• **Sterilization and disinfection**	• Describe the methods of sterilization and disinfection and outline their application. • Maintain appropriate method of sterilization in their clinical practice.
• **Antimicrobial agents**	• Demonstrate mechanism of action of certain anti-microbial agents. • Select appropriate anti microbial agents.
• **Pathogenesis of bacterial diseases**	• Describe virulence factors and their role in pathogenesis.
• **Host-parasite relationship**	• Describe different aspects of host-parasite relationship.
• **Hospital infection**	• Differentiate between normal, opportunistic & pathogenic bacteria and explain their clinical importance.
• **NICU**	• Different types of infection in NICU
• **General immunology**	• Recall some immunology terms • Describe the nature of Ag-Ab reaction • Define types of immune response and cells of immune systems • Discuss the principles of commonly used tests.
• **Hypersensitivity reaction**	• Classify different types of hypersensitivity reaction • Explain their clinical importance • Describe the mechanism of damage in hypersensitivity reaction
• **Transplantation**	• Describe the rationale for matching of human leukocyte antigen in organ transplant • Explain why it is necessary to match MCH and HLA type when transplanting tissue • Compare the immune mechanism involved in host-versus-graft and graft-versus-host disease.

• **Tumour immunology**	• Demonstrate characteristics of transformed cells • Describe causes of tumour
• **Immunodeficiency**	• State the difference between primary and secondary immunodeficiency state • Differentiate between humoral (B-cell) and cellular (T-cell) immune deficiency disorders.
• **Complements**	• Mechanism of compliment activation • Function of compliments
• **Auto-immunity**	• Relate the mechanism of self tolerance to possible explanations for development of auto-immune disease • State the criteria establishing an auto-immune basis for disease.
• **HIV infection**	• Describe the mechanism

Topic in Pharmacology

General objective of Pharmacology:

At the end of the rotation of the block the student will be able to –

- Understand the pharmacodynamics and pharmacokintics, routes of administration, dose and adverse effects of drugs on Paediatric patients.

GENERAL Pharmacology

Contents	Learning Objectives
• Drugs and medicine • Pharmacodynamic • Routes of drugs administration • Bio availability of drugs • Therapeutic index of drugs	• To choose safe drugs • To choose appropriate routes of administration • Vary doses and dose schedule safely
• Antimicrobial agent use in children and neonate a. Antibiotics b. Chemotheraputics • Pharmacological management of pain in paediatric population • Anaesthetic agents used in children's. • Common anticancer drugs used in childhood malignancy. • Bronchodilators, diuretic, antihelminths, steroids & antihistamine	• Chose safer and cheaper antibiotics, analgesics, anaesthetic, anticancer and other drugs • Vary choice of drugs according to indicated routes • Modify drugs dose schedule in sick children having comorbid hepatorenal disease.

BROAD BASE CLINICAL COMPETENCIES

Learning Issue of the different Block

Department of Paediatric Surgery

M.S (Residency) Course

Parent Block (Paediatric Surgery)

Duration: 3 Months

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
Academic Curriculum: **1. Concept of Paediatric Surgery** a. Why paediatric patient need a separate surgical speciality b. How paediatric surgical patients are different from adult. c. What unique aspects of the history should a paediatric surgeon investigate. **2. Fluids, electrolytes and nutritional aspect of paediatric surgical patients.** a. Risk of fluid therapy in premature infants. b. How does renal physiology differs in newborn and adults. c. Clinical signs and symptoms of dehydration in a child. d. Typical maintenance fluid requirement for a child and require for a sick child. e. Electrolyte change in different dehydration related with particular disease like IHPS, ARF, CRF and respiratory failure in children & neonate. f. Special aspect of TPN in neonate and children and their monitoring system. **3. Management of critically ill Paediatric surgical patient** a. Shock and its primary goals of management regarding etiology. b. MODS c. SIRS d. ARDS	To create a special empathy towards paediatric patients. Able to understand the pathophysiology of the homeostasis of the paediatric populations and be competent to manage them in different disease conditions. To understand the pathophysiological changes in different critically ill children and able to manage	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	3 months	EOBR/ Log Book/ Portfolio

e. Metabolic acidosis/ alkalosis f. What is 4,2 - 1 rate for infants fluid system. g. How to calculate the fluid deficit for child with dehydration/ shock h. Mechanical ventilation in children **4. Newborn care** a. How to examine b. What to examine c. How to refer a paediatric surgical neonate to a higher center d. Parents counseling for congenital paediatric surgical emergency/ ambiguous genitalia e. Transport of patient	them accordingly. Able to examine the baby after birth & also able to counsel the parents for management or to referral to the higher center, if needed.				
Training Curriculum: **1. Approach to Paediatric Surgical patients** a. History b. Physical examination **2. Diagnostic work up** **3. Procedural skill development** a. Vascular access, infusion, transfusion b. NG tube/ Catheterization c. Basic suturing techniques d. Gut preparation e. Rectal irrigation f. Wound dressing / Plastering g. Sterilization, basic concept h. Bandaging, Splintage	To develop clinical & procedural competency.				

Department of Paediatric Surgery

M.S (Residency) Course

Surrogate Block

Department of Paediatrics

General Paediatrics

Duration: 1 Month

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• Basic Principle of management of sick baby. • History taking and Examination of Paediatric Patients. • Evaluation of a child with fever. • Evaluation of a child with convulsion. • Approach to a child with abdominal pain.	Able to orient them with the basic principle of neonatal management in terms of examinations, fluid & electrolyte, temperature requirements and chemotherapeutic plan.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	1 month	EOBR/ Log Book/ Portfolio

Neonatology

Duration: 1 Month

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
Neonatology: • Clinical examination of neonate at birth • Resuscitation & Immediate care of neonate after birth. • Transport of critically ill neonate • Fluid and electrolyte management for the neonate. • Special care for premature/ LBW neonates • Neonatal sepsis and antibiotic therapy. • Incubator and ventilator care • Organization of Neonatal ICU • Ventilator management	Able to orient them with the basic principle of neonatal management in terms of examinations, fluid & electrolyte, temperature requirements and chemotherapeutic plan.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	1 month	EOBR/ Log Book/ Portfolio

• Neonatal Adaptations • Thermoregulations in Newborn • Nutritional aspect of the Newborn. • Care of the Normal Baby • Neonate with Respiratory Distress. • Neonate with Abdominal distention • Neonatal Jaundice.					

Paediatric Nephrology

Duration: 1 Month

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• Nephrology from fetus to Adulthood • Renal function, Electrolytes, Fluids and Nutrition's • Functional Renal Investigations • Radioisotope Imaging of the Kidney and the Urinary Tract. • Urodynamic Studies of the lower urinary Tract. Special Considerations • Genetic Basis of Urinary Tract Development and Human Disease • Paediatric Urinary Tract Infections • Evaluations of Voiding Disorder in Children. • Enuresis • Ambiguous Genitalia. • Psychological and Psychiatric Aspects of genitourinary Conditions. • Acute and Chronic Kidney Diseases in Children. • Paediatric Renal Transplants • Dialysis in Children. • Urinary Incontinence.	• Able to be oriented with the nephrological consequence of the urological problem and their presentation, way of investigation and management. • Able to understand the indication, steps of dialysis and its consequence. • Able to know the indication and steps of management of post transplantation.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	1 month	EOBR/ Log Book/ Portfolio

Department of Paediatric Surgery

M.S (Residency) Course

Department of Surgery

General Surgery

Duration: 3 Months

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment

• Basic Surgical Techniques
• Suture materials
• O.T rituals
• Preparation of O.T trolley
• Sterilization of different surgical instruments
• Surgical infections
• Common surgical problems
  o Hernia/ Hydrocele
  o Cyst/ Vascular anomaly
  o Haemorrhoids
  o Abscess
• Pre & Post operative management of Gastro intestinal surgery
• Common early post operative complications
• Surgical abdomen
	Able to understand the principle of surgery and learn to practice them in Paediatric patients.
	
	Able to learn the surgical rituals, surgical safety, OT rituals, surgical sepsis and asepsis.
		Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	3 months	EOBR/
					
					Log Book/
					
					Portfolio

Colorectal Surgery

Duration: 1 Month

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• Recent Advance s Concerning the Normal and abnormal Anatomy of the Anus and Rectum. • Anatomy and Function of the Normal Rectum and Anus. • Genetics and Pathophysiology of Anorectal Malformations. • Laparoscopy in colorectal surgery. • Use of Stapler in different intestinal anastomosis. • Constipations • Fecal incontinence.	• Able to know the basic pathophysiology of colorectal symptomatology. • Able to understand the principle of gut preparation of colonic surgery. • Able to know the guideline for the management of colonic stoma and incontinence. • Able to be oriented with use of intestinal stapler device, anorectal manometry and laparoscopic colorectal surgery.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	1 month	EOBR/ Log Book/ Portfolio

Hepatobiliary Surgery

Duration: 1 Month

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• Essential hepatic and biliary anatomy for the surgeon. • Imaging technique of liver, bile duct and pancrease. • Interpretations of hepatobiliary sonology, MRI & CT findings. • Interventional Radiology in Hepatobiliary Surgery. • Basic Surgical principle for bilio-enteric anastomosis. • Basic Principle of Hepatic Resections. • Surgically important Hepatobiliary infections. • Basic principal of liver Transplant. • Scope of Laparoscopy in Hepatobiliary Surgery.	• Able to explain and interpret the different hepato-biliary diagnostic tools and correlate them with clinical symptoms. • Able to learn the tomographic anatomy of the hepatobiliary system. • Able to know the basic principle of preoperative hepatic evaluation, management of hepatic failure, liver resection and liver transplant.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	1 month	EOBR/ Log Book/ Portfolio

Plastic and Reconstructive Surgery

Duration: 1 Month

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• Basic principles of Plastic Surgery. • Fundamental technique of plastic surgery. • Anatomy and physiology of Skin. • Wound management. • Hypertrophic scar & keloid. • Z-plasty. • Free skin graft. • Scar revision. • Embryology of face, head and neck. • Management of cleft lip and palate. • Asthetic Surgery. • Rhinoplasty. • Otoplasty. • Lip reconstructions.	• Able to know the art of tissue handling during reconstructive procedure. • Able to understand the developmental basis of oro-facial anomalies finger deformities and their steps of management. • Able to learn the basic principle of different type of flaps and free graft.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	1 month	EOBR/ Log Book/ Portfolio

Department of Paediatric Surgery

M.S (Residency) Course

Department of Urology

Duration: 3 Months

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• Urinary symptoms – pathogenesis • Urodynamics – indications, steps, interpretation • Basic principle of Endo-urology • Endourological instruments and their maintenance • Laparoscopic procedure in urology – basic principles • Kidney exposure – surgical techniques, advantages, complications • Evaluation patient of hematuria • Urinary tract infection – manifestation, organism, treatment • Renal stone in children • Diagnostic procedures • Basic principle of renal transplantation	• Able to know the basic symptomatology Pre-, Per- and post-operative management of urological patient including urinary incontinence. • Able to explain the pathophysiology and management of uro-sepsis and urolithiasis. • Able to understand the basic principle of Urodynamics, endo-urology and renal transplant. • Able to know the art of clinical Clerkship of urological patients.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	3 months	EOBR/ Log Book/ Portfolio

Department of Paediatric Surgery

M.S (Residency) Course

Department of Neurosurgery

Duration: 3 Months

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
• History taking in case of Neurosurgical case • Diagnostic tools used for neurosurgical case • Common Paediatric tumors in Neurosurgery • Head injury and its management • Surgical Emergency in Neurosurgery • Maintenance of O.T sterilizing in Neurosurgery. • Neurological assessment of newborn, infants& older children. • Neurosurgical Infections. • Functional neurosurgery in children. • Spinal Dysraphism. • Bed side Neurosurgical Procedures i.e. lumber puncture, ventricular tap, subdural tap and Ventricular shunt tap.	• Able to know the basic surgical ritual for the neuro-surgical procedure. • Able to interpret the different neuro-surgical investigating tools. • Able to know the basic principles of neuro-sepsis and its management. • Able to explain the developmental basis of congenital cranio-spinal defects and their steps of management. • Able to be acquented with endoscopic approach to the ventricles.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	3 months	EOBR/ Log Book/ Portfolio

Department of Paediatric Surgery

M.S (Residency) Course

Department of Orthopaedic Surgery

Duration: 3 Months

Contents	Learning Objectives	Teaching/ Learning strategy	Teaching Aids	Hours/ days	Assessment
1. Common paediatric Orthopaedics and Traumatology. 2. Access to the system 3. Pre hospital care. 4. Field triage. 5. Acute hospital care 6. Rehabilitations 7. Safety and injury preventions 8. CPR 9. Infections of bones, joints and soft tissues. 10. Orthopedic examinations after birth and children. 11. Principles of paediatric plastering.	• Able to understand the basic principle of Paediatric Trauma management. • Able to identify the paediatric Orthopaedic problems, their developmental basis and different steps of their management. • Able to handle the common paediatric fracture. • Able to know the basic principle of paediatric burn management.	Lecture/ Bed Side discussion / Diagnostic Clinic/ MD Clinic/ Clerkship/ Skill training	As per need	3 months	EOBR/ Log Book/ Portfolio

System of assessment of Phase A final Examination

A. Written Examination: Marks – 200

Component outline

i. Applied Basic Medical Sciences
ii. Clinical Methods (Knowledge part)
iii. Emergency Presentation
iv. Common Symptom-based presentation
v. Problem solving skill (History, Physical Exam)
vi. Planning investigations and interpretations of data
vii. Clinical Reasoning skill/ Clinical judgment
viii. Synthesis of information/ Interpretation of Medical Literature
ix. System specific knowledge
x. Ability to judicious diagnostic tests
xi. Management skill and professional behavior
xii. Disease prevention

** Subject matters for each written paper should be defined*

Mark distribution: Written

Paper I : Marks – 100
SAQs : 20 question; 3 hours

Paper II : Marks – 100
SAQs : 20 questions; 3 hours

Organization:
Written examination will be completed in two consecutive days

B. Clinical Examination : Marks – 200

- **Structured observed long case : Marks: 100**

  (With or without selected investigations reports as per respective curriculum)

  - One long case
  - Case taking – 30 to 40 min
  - Crossing – 20 min
  - Two Examiners per examinee

- **Short case: Marks -100**

  - Four short cases
  - Examination and crossing: Total time 20 to 30 m inutes
  - Two examiners per examinee

C. Structured Clinical Assessment (SCA): Marks – 100

- 12 stations : 2 interactive stations and 10 other stations
- Marks – 100; 10 each for interactive stations and 8 each for other stations
- Assessment Areas (number of stations):

  1. Communication (1)
  2. Management/ Medical Ethics (2)
  3. Referral note/ Discharge notes/ Operation notes/Procedure notes (1)
  4. Data interpretation (2)
  5. Procedures (2)
  6. Images (2)
  7. Interactive station (2)

Curriculum of Phase-B

Over view of Phase B

Duration of Phase – B
3 years including thesis

Clinical Part of Phase B are segmented into three parts with defined structured training module and content. The student should learn in a steep leader way i,e year 1 → year 2 → and year 3.

- Year 1
- Year 2
- Year 3

The aim of the phase B is to enable the trainee to further develop the skills knowledge and attitude required to complete training and move to practice as a Consultant Paediatric Surgeon in home and abroad. This final phase of training is when trainees continue to build on the competences achieved in the first phases of the programme, gaining both competences not achieved at earlier stages and further exposure to the more specialized areas of practice. The goals as outlined in previous stages remain pertinent, as it is expected that the trainees will continue to build on their experience and move beyond competent practice to the level of an advanced practitioner, in many of the areas. The planning of these final attachments is important as it provides an opportunity to remedy areas of training deficiency from earlier in the programme, or the development of a special interest. The curriculum goals are again presented in a modular fashion for ease of reference and recording of achievement rather than as a suggested teaching package. There will obviously be areas of duplicate coverage and again this curriculum should be viewed as a framework to aid understanding rather than as a proscriptive document. Though the information on the individual conditions is largely unchanged from the Phase A, the objectives of these 'modules' have been altered to reflect the expectation that the trainees will be exhibiting a more advanced level of performance. The different sections will contain a mixture of information on relevant conditions, symptom patterns and associated surgical operations. Overall these goals outlined are simply guides to progress and should be used by trainees, trainers and Programme Directors to help plan rotational placements to ensure a full breadth of training.

Objectives of Phase B

By the end of the phase B the trainees including those who are following an academic pathway will have:

- Achieved the level of an advanced practitioner in the management of the common surgical problems of childhood
- Acquired the skills to practice with integrity, respect and compassion
- Gained sufficient theoretical knowledge and practical experience to be able to enter for the final Phase B examination in paediatric surgery.
- Developed skills and experience in areas of more specialized practice – with a view to developing a sub-speciality interest if appropriate.
- Achieved the level of advanced practitioner in operations common to Paediatric practice, and be developing competence in procedures appropriate to sub-speciality training.
- The list detailed here will not be achieved by all trainees, as many will be looking to specialize in a particular area. Individual circumstance will dictate the experience each trainee will gain. As a guide the trainee will by the end of this phase be expected to both initiate and lead in the operative management. In addition they will be expected to demonstrate the self-awareness of the need for support and advice of senior colleagues.
- Subsequently the trainee can able to perform the following procedures such as -

Neonatal

- Repair of Oesophageal atresia (+/- fistula)
- Colonic interposition/ gastric pull up
- Repair of recurrent fistula
- Aortopexy
- Congenital Diaphragmatic hernia repair
- Repair of eventration of diaphragm
- Duodeno-dudenostomy
- Management of congenital atresias of intestine
- Management of duplications
- Management of necrotising enterocolitis
- Neonatal pull-through for Hirschsprungs disease

General Abdominal

- Achalasia management
- Fundoplication
- Gastric disconnection
- Feeding jejunostomy
- ACE procedure
- Bowel lengthening procedure
- Posterior sagittal anorectoplasty
- Pull through for Hirschsprungs disease
- Management of Crohns disease of small and large intestine
- Colonic resection for Ulcerative colitis and ileoanal pouch formation
- Colonoscopy

Thoracic

- Management of empyema
- Resection of lung lesions
- Management of chest wall deformity
- Management of airway anomalies

Endocrine

- Resection of salivary gland lesions
- Thyroid/parathyroid surgery
- Management of hyperinsulinism

Oncology

- Hepatoblastoma
- Wilms tumour
- Adrenal tumours – benign/malignant
- Soft tissue tumours
- Sacrococcygeal tumour

Hepatobiliary

- Biliary atresia
- Choledochal cyst

Urology

- Pyeloplasty
- Partial Nephrectomy
- Management of renal calculi
- Management of posterior urethral valves
- Bladder exstrophy closure
- Bladder augmentation / artificial sphincter insertion
- Epispadias repair
- Proximal hypospadias repair

System of evaluation of Phase B

End of Block Assessment exam at end of 1 year

Category of assessment	Assessment Scale (Score/ Grade)	Score/Grade Achieved	
OSPE (5 Stations)	Total marks 5 *10 =50		
Viva	Total marks 50		
Written examination	Total marks 100		
Clinical examination	Total marks 100		
Logbook Assessment	**Complete**: 80-100% if the activities/ Task were Completed Satisfactorily **Recoverable:** 60%-79% completed satisfactorily **Irrecoverable:** <60% completed satisfactorily		
Portfolio Assessment	**Up to date: 80-100%, complete and satisfactory** **Deficient: <80% of the desired contents is complete; needs to revise the contents**		
Competency rating	**Average Rating; Scale: 1 to 10 (EOBR forms)**	Clinical competency	
		Communication Skills	
		Scholarship	
		Profession	

Phase B final Examination

a. Compartment -A

i. Written Examination (Consisting of 2 papers)
ii. Clinical Examination (One long and Four Short cases)
iii. SCA and Oral (10 stations SCA, Oral one board consisting of 2 examiners)

Every Resident must pass all the 3 components of compartment-A separately. Candidates will be declared failed if he/she fails in one or more component of the examination. He /She then have to appear all the 3 components in the next Phase final examination.

b. Compartment – B

i. Thesis and Thesis Defense

System of Phase B Final Examination

1. Assessment

Assessment will done in two broad compartments

a) Compartment - A (Examination consist of 3 (Three) components.

i. Written Examination (Consisting of 2 papers)
ii. Clinical Examination (One long and Four Short cases)
iii. SCA and Oral (10 stations SCA, Oral one board consisting of 2 examiners)

Every Resident must pass all the 3 components of compartment-A separately. Candidates will be declared failed if he/she fails in one or more component of the examination. He/She then have to appear all the 3 components in the next Phase final examination.

b) Compartment – B: Thesis and Thesis Defense

Written Examination: Two papers

Paper – I

- 20 short questions in 2 groups (10 in Group-A and 10 in Group-B)
- This will assess the knowledge of different level and its application
- Marks – 100; Pass mark – 60%; Time: 3 hours

Paper – II

- 10 scenario based problem solving questions (5 in Group-A and 5 in Group-B)
- The questions should focus to assess the capability of handling clinical problem independently and comprehensively as a specialist.
- Structure of the suggested format could be –
    - A scenario followed by question (s)
    - Question may include diagnosis, differential diagnosis, investigation plan, treatment follow up and patient education.
- Marks – 100; Pass mark – 60%, Time: 3 hours

Clinical Examination: Long case and Short cases:

There will be one long case and four short cases.

- Clinical Examiners:
    - Four Professor; 2 external (Associate Professor may be included in those discipline where there is inadequate number of Professor).
    - One should be appointed as Convener by the Dean/ Controller of Examination.
- Examination: Cases to be collected and examination to be conducted by the Convener of the respective examination.
    i. Long case:
        - Directly observed
        - Two examiners for each examinee
        - History taking and examination by the examinee – 30 min
        - Discussion on the case 20 min (Presentation 6 min, Crossing 6x2 min and Decision 2 min)
        - Examiners will not ask any question nor stop the examinee in any way during history taking and physical examinations.
        - Discussion should be done as per structured format and proper weightage on different segments of clinical skills.
        - Marks – 100; Pass mark – 60%
    ii. Short cases:
        - Four in number
        - Time 20-30 min (Time will be equally divided for each short case)
        - Crossing should be done with proper weightage on different segment of clinical skills
        - Total marks 100; pass mark 60%

Structured Clinical Assessment (SCA)

- Examination:
    - 10 stations : 5 min each
    - Marks 100; Pass mark 60%
- Station setter
    - 5 station setters, Associate Professor and above; 2 external
    - Each will be asked to set minimum 4 stations covering specified areas
    - To be submitted to the Controller of Examination
- Moderator:
    - 4 moderators; Professor/ Assoc. Professor: 2 external
    - Responsibilities: Selection of stations, printing, Packaging, Station Planning.
    - List of requirements to be prepared and submitted to the Controller of Examination.

    - One of the moderator will be appointed as Convener of SCA by the Controller of Examination.
- Conduction of Examination:
    - Examiners 4, (including the convener); observers; Organizers as per requirements.
    - Stations to be arranged and examination to be conducted by the Convener.

Oral Examination:

- One board consisting of 2 examiners
- 20 minutes (9+9+2)
- Marks 100; Pass Mark 60%

Thesis Evaluation

- To be evaluated by 3 (three) evaluators: 2 subject specialist and one academician involve in research and teaching research methodology.
- Among the subject specialist one should be external
- Evaluators shall be in the rank of Professor/ Assoc. Professor
- Supervisor will attend the defense as an observer and may interact only when requested by the evaluators.
- Thesis must be submitted to the controller of Exam not later than 27 months of enrolment in Phase-B.
- Thesis must be sent to the evaluators 2 (two) week prior to assessment date
- Evaluation will cover thesis writing and its defense. Marks: Thesis writing 200, Defense 100.
- For thesis writing evaluator will mark on its structure, content, flow, scientific value, cohesion, etc.
- For defense – candidate is expected to defend, justify and relate the work and its findings.
- Assessment must be completed in next 3 months
- Outcome of the assessment shall be in 4 categories – “Accepted”, “Accepted with minor correction”, Accepted with major correction” and “Not Accepted”.

Description of terms:

- **Accepted:** Assessors will sing the document and resident will bound it and submit to the Examination Department by 7 days.

- Accepted with minor correction: Minor correction shall include small inclusion/exclusion of section; identified missing references, correction of references and typographical and language problem. To be corrected and submitted within 2 weeks.
- Accepted with major correction: Task is completed as per protocol with acceptable method but some re-analysis of result and corresponding discussion are to be modified.
    - To be corrected, confirmed by supervisor and submit within 3 (Three) weeks.
- Not Accepted: When work is not done as per protocol or method was faulty or require further inclusion or confirmation of study.
    - To complete the suggested deficiencies and reappear in defense examination during its next Phase Final Examination.
    - Candidate has to submit his/her thesis and sit for examination and pay usual examination fess for the examination.

Residents must submit and appear Thesis defense at notified date and time. However not accepted of the Thesis does not bar the resident in appearing the written, clinical and oral exam.

Qualifying for MS degree:

On passing both the compartments, the candidate will be conferred the degree of MS in the respective discipline. If any candidate fails in one compartment he/she will appear in that compartment only in the subsequent Phase-B exam.

Phase B Year -1

Phase B, Year-1 consist of 3 (three) training modules and their academic curriculum

Module 1

Revisit and recapitulation of Phase A

- To understand the basic anatomy that surgeons will encounter during the management of children and the embryology related to congenital anomalies.
- To understand the normal physiological processes at different ages and the effects of disease and trauma on these processes
- To understand surgical pathology that can affect children at different ages.

Module 2

Common paediatric surgical conditions

- To assess and initiate investigation and management of common surgical conditions which may confront any patient whilst under the care of surgeons, irrespective of their speciality.
- To have sufficient understanding of these conditions so as to know what and to whom to refer in a way that an insightful discussion may take place with colleagues whom will be involved in the definitive management of these conditions.
- This defines the scope and depth of the topics in the generality of clinical surgery required of any surgeon

Module 3

Basic paediatric surgical skills

- To prepare oneself for surgery
- To safely administer appropriate local anaesthetic agents
- To handle surgical instruments safely
- To handle tissues safely
- To incise and close superficial tissues accurately
- To tie secure knots
- To safely use surgical diathermy
- To achieve haemostasis of superficial vessels.
- To use a suitable surgical drain appropriately.
- To assist helpfully, even when the operation is not familiar.
- To understand the principles of anastomosis
- To understand the principles of endoscopy including laparoscopy

The expected outcomes for this phase of training are as follows

1. Primary management of the common surgical problems of childhood
2. A trainee with integrity, respect and compassion
3. Increasing exposure to the basic areas of paediatric surgery to include clinical presentation, operative and non-operative management of cases within the different areas.
4. Competence in basic surgical techniques for the operations commonly done in paediatric surgical practice
5. The assistant skills for operations outlined here are those relevant to this stage of surgical training. Many are related to the conditions outlined in the speciality modules both elective and emergency as follows.

Elective Procedures

- Gastrostomy – open / PEG
- Fundoplication
- Splenectomy / cholecystectomy
- Upper GI Endoscopy (flexible)
- Exomphalos minor
- Anoplasty for low anorectal malformation
- Intestinal resection and anastamosis (non-neonatal)
- Rectal Biopsy for Hirschsprung's (suction/open)
- Inguinal herniae – infant and neonatal (not extreme prematurity)
- Colostomy closure
- C.V. line insertion
- Open biopsy of tumours
- Muscle biopsy
- Cystoscopy
- Repair distal hypospadias
- Simple Nephrectomy (dysplastic kidney)
- Ureteric reimplant / submucosal injection
- Closure of vesicostomy or ureterostomy
- Laparoscopic approach for diagnosis

Emergency Procedures

- Gastroschisis closure (primary or silo)
- Colostomy formation – anorectal malformations / Hirschsprungs disease
- Correction of malrotation
- Meconium ileus enterotomy / or stoma formation
- Operative reduction / resection of intussusception
- Urinary diversion (ureterostomy/vesicostomy formation)
- Removal of oesophageal foreign body

Year 1 Topics

Topic	**Child with abdominal pain**
Category	
Sub-category:	
Objective	o To be able to assess and initiate management of a child presenting with abdominal pain including appropriate communication with relevant family or carers o To be able to assess and initiate management of a child presenting with intussusception including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**The vomiting child**
Category	
Sub-category:	
Objective	o To be able to assess and initiate management of a child presenting with vomiting including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	
Technical Skills and Procedures	

Topic	**Trauma in children**
Category	
Sub-category:	
Objective	o To be able to assess and initiate the immediate management of a child presenting with trauma including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**Child with groin conditions**
Category	
Sub-category:	
Objective	o To be able to assess and initiate management of a child presenting with groin pathology (including undescended testis, hernia, hydrocele and painful swellings of the genitalia) including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**Abdominal wall pathology**
Category	
Sub-category:	
Objective	o To be able to assess and initiate management of a child presenting with abnormalities of the abdominal wall (including umbilical hernia, supra-umbilical hernia and epigastric hernia) including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**Paediatric urology**
Category	
Sub-category:	
Objective	• To be able to assess and initiate management of a child presenting with including abnormalities of the urinary tract (including urinary tract infection and haematuria) including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**Child with Constipation**
Category	
Sub-category:	
Objective	○ To be able to assess and initiate management of a child presenting with constipation including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**Head or neck swelling**
Category	
Sub-category:	
Objective	○ To be able to assess and initiate management of a child presenting with a swelling of head or neck including appropriate communication with relevant family or carers
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Topic	**Emergency paediatric surgery**
Category	
Sub-category:	
Objective	○ To be able to assess and initiate management of a child presenting as an emergency with a range of paediatric surgical conditions including appropriate communication with relevant family or carers and senior staff. ○ This distinguishes the anatomical and clinical features which makes the management of children special.
Knowledge	
Clinical Skills	As Observer
Technical & Procedures skill	As assistant/ Observer

Phase B Year 2

Revisit & Recapitulation of year 1 topic and modules in terms of knowledge, skill and attitude is mandatory for Phase-B, year 2. Phase-B, Year 2 consist of 4 (four) training modules and their academic curriculum.

Module 1

Common paediatric surgical conditions

- To assess and initiate investigation and management of common surgical conditions which may confront any patient whilst under the care of surgeons, irrespective of their speciality.
- To have sufficient understanding of these conditions so as to know what and to whom to refer in a way that an insightful discussion may take place with colleagues whom will be involved in the definitive management of these conditions.
- This defines the scope and depth of the topics in the generality of clinical surgery required of any surgeon

Module 2

Basic paediatric surgical skills

o To prepare oneself for surgery
o To safely administer appropriate local anaesthetic agents
o To handle surgical instruments safely
o To handle tissues safely
o To incise and close superficial tissues accurately
o To tie secure knots
o To safely use surgical diathermy
o To achieve haemostasis of superficial vessels.
o To use a suitable surgical drain appropriately.
o To assist helpfully, even when the operation is not familiar.
o To understand the principles of anastomosis
o To understand the principles of endoscopy including laparoscopy

Module 3

The principles of assessment and management of the paediatric surgical patient

- To assess the surgical patient
- To elicit a history that is relevant, concise, accurate and appropriate to the patient's problem
- To produce timely, complete and legible clinical records.
- To assess the patient adequately prior to operation and manage any pre-operative problems appropriately.
- To propose and initiate surgical or non-surgical management as appropriate.
- To take informed consent for straightforward cases.

Module 4

Peri-operative care of the paediatric surgical patient

- To manage patient care in the peri-operative period.
- To assess and manage preoperative risk.
- To take part in the conduct of safe surgery in the operating theatre environment.
- To assess and manage bleeding including the use of blood products.
- To care for the patient in the post-operative period including the assessment of common complications.
- To assess, plan and manage post-operative fluid balance
- To assess and plan perioperative nutritional management.

Common Paediatric Surgical Conditions

Common Paediatric Surgical conditions that are learn in Phase-B, Year 1 are also incorporate in Phase-B, Year 2 in a more systemic ways.

Objective:

This section assumes that trainees have general medical competences consistent with an ongoing commitment to keeping these skills and knowledge up to date. It is predicated on the value that surgeons are doctors who carry our surgery and require competence.

To demonstrate understanding of the relevant basic scientific principles for each of these surgical conditions and to be able to provide the relevant clinical care as defined in modules assessment and management as defined in Modules.

Topics Presenting symptoms or syndromes

- Abdominal pain
- Abdominal swelling
- Change in bowel habit
- Gastrointestinal haemorrhage
- Rectal bleeding
- Dysphagia
- Dyspepsia
- Jaundice

To include the following conditions

- Appendicitis
- Gastrointestinal malignancy
- Inflammatory bowel disease
- Diverticular disease
- Intestinal obstruction
- Adhesions
- Abdominal hernias
- Peritonitis
- Intestinal perforation
- Benign oesophageal disease
- Peptic ulcer disease
- Benign and malignant hepatic, gall bladder and pancreatic disease
- Haemorrhoids and perianal disease
- Abdominal wall stomata

Breast disease

- Breast lumps and nipple discharge
- To include the following conditions
- Benign and malignant breast lumps
- Mastitis and breast abscess
- Acute Breast pain

Peripheral vascular disease

Presenting symptoms or syndrome

- Chronic and acute limb
- ischaemia
- Aneurysmal disease
- Transient ischaemic attacks
- Varicose veins
- Leg ulceration

To include the following conditions

- Embolic and thrombotic arterial disease
- Venous insufficiency
- Diabetic ulceration

Cardiovascular and pulmonary disease

To include the following conditions

- Obstructive airways disease
- Space occupying lesions of the chest

Genitourinary disease

Presenting symptoms or syndrome

- Loin pain
- Haematuria
- Lower urinary tract symptoms
- Urinary retention
- Renal failure
- Scrotal swellings
- Testicular pain

To include the following conditions

- Genitourinary malignancy
- Urinary calculus disease
- Urinary tract infection
- Benign prostatic hyperplasia
- Obstructive uropathy

Trauma and orthopaedics

Presenting symptoms or syndrome

To include the following conditions

- Simple fractures and joint dislocations
- Fractures around the hip and ankle
- Basic principles of inflammatory joint disease including bone and joint infection
- Compartment syndrome
- Spinal nerve root entrapment and spinal cord compression
- Metastatic bone cancer
- Common peripheral neuropathies and nerve injuries

Disease of the Skin, Head and Neck

Presenting symptoms or syndrome

- Lumps in the neck
- Epistaxis
- Upper airway obstructions
- To include the following conditions
- Benign and malignant skin lesions
- Benign and malignant lesions of the mouth and tongue

Neurology and Neurosurgery

Presenting symptoms or syndrome

- Headache
- Facial pain
- Coma
- To include the following conditions
- Space occupying lesions from bleeding and tumour

Endocrine

Presenting symptoms or syndrome

- Lumps in the neck
- Acute endocrine crises

To include the following conditions

- Thyroid and parathyroid disease
- Adrenal gland disease
- Diabetes

Basic Paediatric Surgical skills

The basic paediatric surgical skills that acquired in Phase-B, Year 1 should be reevaluated in Phase-B, Year 2 in a more precise and specific ways.

Objective:

This section assumes that trainees have obtained the competences consistent with an ongoing commitment to keeping these skills and knowledge up to date. It is predicated on the value that surgeons are doctors who carry our surgery and require competence.

To demonstrate understanding of the relevant basic scientific principles for each of these surgical conditions and to be able to provide the relevant clinical care as defined in modules assessment and management as defined in Modules

Knowledge

Principles of safe surgery

- Preparation of the surgeon for surgery
- Principles of hand washing, scrubbing and gowning
- Immunisation protocols for surgeons and patients

Administration of local anaesthesia

- Choice of anaesthetic agent
- Safe practice

Surgical wounds

- Classification of surgical wounds
- Principles of wound management
- Pathophysiology of wound healing
- Scars and contractures

Incision of skin and subcutaneous tissue:

- Langer's lines
- Choice of instrument
- Safe practice

Closure of skin and subcutaneous tissue:

- Options for closure
- Suture and needle choice

Safe practice

- Knot tying
  - o Range and choice of material for suture and ligation
  - o Safe application of knots for surgical sutures and ligatures
- Haemostasis:
  - o Surgical techniques
  - o Principles of diathermy

Tissue handling and retraction:

- Choice of instruments

- Biopsy techniques including fine needle aspiration cytology

- Use of drains:
  - Indications
  - Types
  - Management/removal

Principles of anastomosis

- Principles of surgical endoscopy including laparoscopy Clinical Skills, Preparation of the surgeon for surgery
- Effective and safe hand washing, gloving and gowning & Preparation of a patient for surgery
- Creation of a sterile field
- Antisepsis
- Draping & Administration of local anaesthesia
- Accurate and safe administration of local anaesthetic agent
- Technical Skills and Procedures, Preparation of the surgeon for surgery
- Effective and safe hand washing, gloving and gowning & Administration of local anaesthesia
- Accurate and safe administration of local anaesthetic agent & Incision of skin and subcutaneous tissue:
- Ability to use scalpel, diathermy and scissors & Closure of skin and subcutaneous tissue:
- Accurate and tension free apposition of wound edges & Knot tying:
  - Single handed
  - Double handed
  - Instrument
  - Superficial
  - Deep

Haemostasis:

- Control of bleeding vessel (superficial)
- Diathermy
- Suture ligation
- Tie ligation
- Clip application
- Transfixion suture

Tissue retraction:

- Tissue forceps
- Placement of wound retractors

Use of drains:

- Insertion
- Fixation
- Removal

Tissue handling:

- Appropriate application of instruments and respect for tissues
- Biopsy techniques

Skill as assistant:

- Anticipation of needs of surgeon when assisting

The expected outcomes for this phase of training are as follows

6. Further experience in the management of the common surgical problems of childhood
7. A practitioner with integrity, respect and compassion
8. Increasing exposure to the more specialised areas of paediatric surgery to include clinical presentation, operative and non-operative management of cases within the different areas.
9. Competence in further range of operations common to paediatric practice
10. The operative skills outlined here are those relevant to this stage of surgical training. Many are related to the conditions outlined in the speciality modules both elective and emergency as follows.

Elective Procedures

- Gastrostomy – open / PEG
- Fundoplication
- Splenectomy / cholecystectomy
- Upper GI Endoscopy (flexible)
- Exomphalos minor
- Anoplasty for low anorectal malformation
- Intestinal resection and anastamosis (non-neonatal)
- Rectal Biopsy for Hirschsprung's (suction/open)
- Inguinal herniae – infant and neonatal (not extreme prematurity)
- Colostomy closure
- C.V. line insertion
- Open biopsy of tumours
- Muscle biopsy
- Cystoscopy
- Repair distal hypospadias
- Simple Nephrectomy (dysplastic kidney)
- Ureteric reimplant / submucosal injection
- Closure of vesicostomy or ureterostomy
- Laparoscopic approach for diagnosis

Emergency Procedures

- Gastroschisis closure (primary or silo)
- Colostomy formation – anorectal malformations / Hirschsprungs disease
- Correction of malrotation
- Meconium ileus enterotomy / or stoma formation
- Operative reduction / resection of intussusception
- Urinary diversion (ureterostomy/vesicostomy formation)
- Removal of oesophageal foreign body

Year -2 Topics

Topic	Groin conditions
Category	General Surgery of Childhood
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with 'groin • pathology' • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention if required • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source
Knowledge	INGUINAL HERNIA: Developmental anatomy Natural history Indications and outcomes of surgery HYDROCELE: Developmental anatomy Natural history Place of conservative management Indications and outcomes of surgery UNDESCENDED TESTIS: Developmental anatomy Natural history of undescended testis and retractile testis Place of conservative management Indications and outcomes of surgery PENILE CONDITIONS: Developmental anatomy Natural history Place of conservative management Indications and outcomes of surgery ACUTE SCROTUM: Natural history Place of conservative management Indications and outcomes of surgery
Clinical Skills	INGUINAL HERNIA: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups HYDROCELE: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups UNDESCENDED TESTIS:

	Ability to assess child and reach appropriate diagnosis Ability to differentiate true undescended testis from retractile variant Ability to form a treatment plan Ability to communicate with all relevant groups PENILE CONDITIONS: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups ACUTE SCROTUM: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Hernia: Inguinal herniotomy (non-neonatal) Inguinal hernia (neonatal) Hydrocele: Surgery for hydrocele Prepucioplasty Circumcision Surgery for undescended testis Surgery for acute scrotum

Topic	**Abdominal wall pathologies**
Category	General Surgery of Childhood
Sub-category:	
Objective	o To be able to assess a child presenting to the OP clinic or acutely with abnormalities of the abdominal wall o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention if required o To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source
Knowledge	UMBILICAL HERNIA: Developmental anatomy Natural history Place of conservative management Indications and outcomes of surgery SUPRA-UMBILICAL HERNIA: developmental anatomy Natural history to include contrast with umbilical hernia Indications and outcomes of surgery EPIGASTRIC HERNIA: Developmental anatomy Natural history Indications and outcomes of surgery

Clinical Skills	UMBILICAL HERNIA: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups SUPRA-UMBILICAL HERNIA: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups EPIGASTRIC HERNIA: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair of umbilical hernia Repair of epigastric hernia Repair of umbilical hernia

Topic	**Head and neck swellings**
Category	General surgery of childhood
Sub-category:	Management of benign surgical conditions
Objective	o To be able to assess a child presenting to the OP clinic or acutely with a head/neck swelling as the primary presenting symptom o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention if required o To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source
Knowledge	Patterns of symptoms and relation to likely pathology, relevant anatomy and age of child Relevance of embryonic development of head and neck structures Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Excision skin lesion Excision/biopsy of lymph nodes Surgery for thyroglossal cyst Surgery for branchial cysts and branchial remnants

Topic	**Different Access**
Category	General Surgery of Childhood
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Vascular access Central venous lines and ports (incl percutaneous) Dialysis PD catheter insertion/removal

Topic	**Pyloric stenosis**
Category	Gastrointestinal
Sub-category:	
Objective	o To be able to assess an infant with vomiting o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to make a diagnosis of pyloric stenosis o To be able to treat the child appropriately up to and including operative intervention if required o To be able to communicate the above information at the required level to parents, other team members/referral source
Knowledge	Patterns of symptoms and relation to likely pathology Significance of bile stained vomiting Differential diagnosis Place and value of investigations understanding of the biochemical changes associated with the condition
Clinical Skills	Ability to assess ill child including an assessment of severity of dehydration Ability to safely correct the dehydration and biochemical abnormalities Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Pyloromyotomy

Topic	**Gastro-oesophageal reflux**
Category	Gastrointestinal
Sub-category:	
Objective	o *To understand the presenting symptoms of common gastrointestinal conditions in* childhood and their management o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention in selected cases o To be able to communicate the above information at the required level to patients/parents/ other team members/ referral source o To be able to practice with integrity, respect and compassion

Knowledge	Pathophysiology Investigation and management Indications for operative intervention
Clinical Skills	Ability to synthesise history and investigations into appropriate management plan Ability to communicate information to parents/child
Technical and Procedural skill as assistant/ observer	Oesophageal dilatation Gastrostomy - open PEG (insertion/removal) Fundoplication (open/laparoscopic)

Topic	**Abdominal pain**
Category	Gastrointestinal
Sub-category:	
Objective	o To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention in selected cases o To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source o To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Appendicectomy (open and laparoscopic) Operative reduction of intussusception

Topic	**Constipation**
Category	Gastrointestinal
Sub-category:	
Objective	o To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention inselected cases o To be able to communicate the above information at the required level to patients/parents/ other team members/ referral source o To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis to include medical anomalies and socio-psychological aspects of symptom Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups. To include community aspects of further management

Technical and Procedural skill as assistant/ observer	Rectal Biopsy Manual evacuation EUA rectum Anal stretch

Topic	**Gastro intestinal bleeding**
Category	Gastrointestinal
Sub-category:	
Objective	o To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention in selected cases o To be able to communicate the above information at the required level to patients/parents/ other team members/ referral source o To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Colonoscopy Sigmoidoscopy Small bowel resection/anastomosis (Meckels)

Topic	**Intestinal obstruction**
Category	Gastrointestinal
Sub-category:	
Objective	o To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management o To be able to formulate a differential diagnosis and an investigation and management plan o To be able to treat the child appropriately up to and including operative intervention in selected cases o To be able to communicate the above information at the required level to patients/parents/ other team members/ referral source o To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Laparotomy Adhesiolysis Small bowel resection/anastomosis

Topic	Inflammatory bowel disease
Category	Gastrointestinal
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Colonoscopy Sigmoidoscopy Small bowel resection/anastomosis Right hemicolectomy Left hemicolectomy Total colectomy

Topic	Short bowel syndrome
Category	Gastrointestinal
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Liver disease
Category	Gastrointestinal
Sub-category	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Cholecystectomy (open/laparoscopic)

Topic	Congenital diaphragmatic hernia
Category	Neonatal Surgery
Sub-category	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Different management strategies Role of pre-natal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Operation for diaphragmatic hernia (neonate)

Topic	Intestinal atresias
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Anatomical variants Associated anomalies Outcome data on the condition Different management strategies Role of pre-natal counseling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Duodeno- duodenostomy Intestinal resection/anastomosis Stoma formation

Topic	Meconium ileus
Category	Neonatal Surgery
Sub-category	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children including the appropriate use of radiological techniques in diagnosis and management • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal + genetic counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Operation for meconium ileus

Topic	**Malrotation**
Category	Neonatal Surgery
Sub-category	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Correction of malrotation

Topic	**Hirschsprung's disease**
Category	Neonatal Surgery
Sub-category:	
Objective	• *To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period* • *To be able to construct an appropriate management plan for these children* • *To understand the place of operative management in the neonatal period and be able to carry this out in selected cases* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of genetic counseling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Rectal biopsy Rectal washout Trans-anal pull through +/- laparoscopic assistance Duhamel/ Swensons/ Soave procedure

Topic	**Anorectal malformations**
Category	Neonatal Surgery
Sub-category	
Objective	• *To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period* • *To be able to construct an appropriate management plan for these children* • *To understand the place of operative management in the neonatal period and be able to carry this out in selected cases* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Anoplasty Sigmoid colostomy PSARP

Topic	**Oesophageal atresia and tracheo-oesophageal fistula**
Category	Neonatal Surgery
Subcategory	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counseling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Operation for oesophageal atresia/TOF Oesophageal dilatation (neonatal)

Topic	Necrotising enterocolitis
Category	Neonatal Surgery
Sub-category	
Objective	• *To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period* • *To be able to construct an appropriate management plan for these children* • *To understand the place of operative management in the neonatal period and be able to carry this out in selected cases* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of presentation Patho-physiology of the condition Associated anomalies Outcome data on the condition Differing management strategies
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Laparotomy Intestinal resection/anastomosis

Topic	Neonatal abdominal wall defects
Category	Neonatal Surgery
Sub-category	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counseling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair of gastroschisis (operative or the application of preformed silos) Repair of exomphalos

Topic	Disorders of Sex Development (DSD)
Category	Neonatal Surgery
Sub-category	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of genetic counseling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Antenatal management
Category	Neonatal Surgery
Sub-category	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation of different conditions Place and value of investigations Types of and indications for antenatal intervention Role of ante-natal counselling
Clinical Skills	Ability to counsel and inform parents Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Generic procedures
Category	Oncology
Sub-category	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Tumour biopsy

Topic	Wilms tumour
Category	Oncology
Sub-category	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Nephro-ureterectomy

Topic	Neuroblastoma
Category	Oncology
Sub-category	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Surgery for neuroblastoma

Topic	Hepatoblastoma
Category	Oncology
Sub-category	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan

	Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Only specialist centre

Topic	**Soft tissue tumours**
Category	Oncology
Sub-category:	
Objective	• *To understand the presentation and management of childhood tumours* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Local excision soft tissue tumour

Topic	**Haematological malignancies**
Category	Oncology
Sub-category	
Objective	• *To understand the presentation and management of childhood tumours* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Management strategies and basic outcome data of treatment modalities
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Cervical Lymph node biopsy

Topic	**Osteosarcoma**
Category	Oncology
Sub-category	
Objective	• *To understand the presentation and management of childhood tumours* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis

	Management strategy and basic outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	**Benign tumours**
Category	Oncology
Sub-category	
Objective	• *To understand the presentation and management of childhood tumours* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Oopherectomy Oophero-salpingectomy

Topic	**Adrenal gland**
Category	Endocrine conditions
Sub-category	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Adrenalectomy

Topic	**Thyroid gland**
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations

	Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant group
Technical and Procedural skill as assistant/ observer	Thyroidectomy

Topic	**Parathyroid disease**
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	**Diabetes**
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Disorders of growth
Category	Endocrine conditions
Sub-category	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Disorders of sex development
Category	Endocrine conditions
Sub-category	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Subcutaneous mastectomy

Topic	Chest wall anomalies
Category	Thoracic Surgery
Sub-category	
Objective	• *To understand the presenting symptoms of thoracic anomalies in childhood and their management* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To identify the place of surgery* • *To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source* • *To be able to practice with integrity, respect and compassion*
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair Pectus excavatum

Topic	Congenital and acquired lung abnormalities
Category	Thoracic Surgery
Sub-category	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of developmental embryology and pertinent anatomy Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Thoracotomy Open biopsy of lung Pulmonary lobectomy Partial pulmonary lobectomy Excision of extra lobar sequestration Aspiration of pleural cavity Insertion of open chest drain Insertion of percutaneous chest drain Open pleural debridement Thorascopic pleural debridement Rigid bronchoscopy

Topic	Tracheal anomalies
Category	Thoracic Surgery
Sub-category	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of developmental embryology and pertinent anatomy Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Fibreoptic bronchoscopy Tracheostomy Rigid bronchoscopy Fibreoptic bronchoscopy

Topic	Inhaled foreign body
Category	Thoracic Surgery
Sub-category:	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of developmental embryology and pertinent anatomy Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Rigid removal of FB from bronchus

Topic	Urinary tract infection
Category	Urology
Sub-category	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Relevance of different symptom patterns Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Haematuria
Category	Urology
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Cystourethroscopy

Topic	Urethral meatus
Category	Urology
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Meatotomy Meatoplasty Urethral dilatation

Topic	Hypospadias
Category	Urology
Sub-category	
Objective	• *To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to treat the child appropriately up to and including operative intervention in selected cases* • *To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source* • *To be able to practice with integrity, respect and compassion*
Knowledge	Likely modes of presentation Different anatomical variants Place and value of investigations/ operative intervention
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair distal hypospadias Repair proximal hypospadias Repair urethral fistula

Topic	Upper tract obstruction (to include pelvi-ureteric junction obstruction and vesico-ureteric junction obstruction)
Category	Urology
Sub-category	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Place and value of investigations/ operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Pyeloplasty Nephrectomy (open/laparoscopic) Insertion of percutaneous nephrostomy Insertion of open nephrostomy Insertion of JJ stent Ureteric reimplantation

Topic	Posterior urethral valves
Category	Urology
Sub-category:	
Objective	• *To* be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention inselected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Place and value of investigations/ operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Destruction of PUV Formation/closure of vesicostomy

Topic	Urinary tract calculus disease
Category	Urology
Sub-category	
Objective	• *To* be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Aetiological and biochemical factors Place and value of investigations/ operative and non-operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Interventional management of urolithiasis

Topic	**Bladder dysfunction (incl. neurogenic bladder)**
Category	Urology
Sub-category:	
Objective	• *To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to treat the child appropriately up to and including operative intervention in selected cases* • *To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source* • *To be able to practice with integrity, respect and compassion*
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Urodynamics Cysto-urethroscopy Vesicostomy Closure of vesicostomy Suprapubic catheter Endoscopic cauterisation of lesion of bladder Endoscopic management of clot from bladder Ileal bladder reconstruction Colonic bladder reconstruction Ureteric diversion Ureteric un-diversion Mitrofanoff procedure:

Topic	**Renal failure**
Category	Urology
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of referral criteria to renal medical colleagues
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	PD catheter insertion/removal Haemodialysis catheter insertion

Topic	Bladder exstrophy (including Epispadias)
Category	
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Duplication of urinary tract
Category	Urology
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Embryological derivation and anatomical variants Place and value of investigations/ operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Hemi-nephrectomy (open/laparoscopic) Excision of ureterocoele Endoscopic incision of ureterocoele

Topic	Vesico-ureteric reflux
Category	Urology
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Ureteric reimplantation Cysto-urethroscopy

Topic	Orthopaedic surgery
Category	Surgical Disciplines
Sub-category	
Objective	• *To understand the basic principles involved in other Paediatric Surgical Specialties* • *To understand how these disciplines interact with General Paediatric Surgery and Paediatric Urology* • *To be able to refer to other specialties appropriately*
Knowledge	To understand the basic principles of major conditions in the speciality To understand the referral mechanisms to the discipline To be aware of the influence of conditions on child health
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	Paediatric cardiac surgery
Category	Surgical Disciplines
Sub-category:	
Objective	• To understand the basic principles involved in other Paediatric Surgical Specialties • To understand how these disciplines interact with General Paediatric Surgery and Paediatric Urology • To be able to refer to other specialties appropriately
Knowledge	To understand the basic principles of major conditions in the speciality To understand the referral mechanisms to the discipline To be aware of the influence of conditions on child health
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	Paediatric neurosurgery
Category	Surgical Disciplines
Sub- category:	
Objective	• *To* understand the basic principles involved in other Paediatric Surgical Specialties • To understand how these disciplines interact with General Paediatric Surgery and Paediatric Urology • To be able to refer to other specialties appropriately • To be able to recognize the emergency presentation of a ventriculo-peritoneal (VP) shunt malfunction or complication
Knowledge	To understand the basic principles of major conditions in the speciality To understand the referral mechanisms to the discipline To be aware of the influence of conditions on child health To be aware of possible presentations of VP shunt malfunction
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan To be able to achieve emergency access to a malfunctioning VP shunt or ventricles
Technical and Procedural skill as assistant/ observer	

Topic	**Paediatric plastic surgery**
Category	Surgical Disciplines
Sub-category:	
Objective	• *To understand the basic principles involved in other Paediatric Surgical Specialties* • *To understand how these disciplines interact with General Paediatric Surgery and Paediatric Urology* • *To understand the initial management of thermal injury in children* • *To be able to refer to other specialties appropriately*
Knowledge	To understand the basic principles of major conditions in the speciality To understand the referral mechanisms to the discipline To be aware of the influence of conditions on child health To be aware of the various components of the initial management of thermal injury in children
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan To be able to initiate the initial assessment and management of a thermally injured child
Technical and Procedural skill as assistant/ observer	

Topic	**Paediatric ophthalmology**
Category	Surgical Disciplines
Sub-category:	
Objective	• *To understand the basic principles involved in other Paediatric Surgical Specialties* • *To understand how these disciplines interact with General Paediatric Surgery and Paediatric Urology* • *To be able to refer to other specialties appropriately*
Knowledge	To understand the basic principles of major conditions in the speciality To understand the referral mechanisms to the discipline To be aware of the influence of conditions on child health
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	**Paediatric E.N.T. Surgery**
Category	Surgical Disciplines
Sub-category:	
Objective	• *To* understand the basic principles involved in other Paediatric Surgical Specialties • To understand how these disciplines interact with General Paediatric Surgery and Paediatric Urology • To be able to refer to other specialties appropriately
Knowledge	To understand the basic principles of major conditions in the speciality To understand the referral mechanisms to the discipline To be aware of the influence of conditions on child health
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	Transplantation
Category	Surgical Disciplines
Sub-category:	
Objective	*To understand the principles of diagnosis and management in a number of conditions as they present to the General Paediatric Surgeon*
Knowledge	To understand the basic principles of transplantation both surgical and medical To understand the referral mechanisms to the discipline To understand the ethical principles involved
Clinical Skills	To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	Spina bifida
Category	Surgical Disciplines
Sub-category	
Objective	*To understand the principles of diagnosis and management in a number of conditions as they present to the General Paediatric Surgeon*
Knowledge	To understand the basic principles of management To understand the local networks for managing the condition To be aware of the influence of conditions on child health
Clinical Skills	To recognise the associated anomalies when dealing with children To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	Vascular anomalies
Category	Surgical Discipline
Sub-category	
Objective	*To understand the principles of diagnosis and management in a number of conditions as they present to the General Paediatric Surgeon*
Knowledge	To understand the pathophysiology of the condition To know the differential diagnosis To understand the indications and outcomes of therapy
Clinical Skills	To recognise associated anomalies To construct an appropriate investigation and referral plan including identifying the need for surgery
Technical and Procedural skill as assistant/ observer	

Topic	Child abuse
Category	Surgical Disciplines
Sub-category:	
Objective	*To understand the principles of diagnosis and management in a number of conditions as they present to the General Paediatric Surgeon*
Knowledge	To understand the basic principles of diagnosis and management

	To understand the referral mechanisms within local setting To be aware of legal responsibilities
Clinical Skills	To recognise the possibility of the condition To construct an appropriate investigation and referral plan
Technical and Procedural skill as assistant/ observer	

Topic	**Pre-operative care**
Category	Operative skills
Sub-category:	
Objective	*To ensure the trainee has reached a level of competence in a range of basic operative procedures.*
Knowledge	Indications for surgery Required preparation for surgery to include necessary pre-operative investigations Outcomes and complications of surgery Knowledge of the admission process
Clinical Skills	Synthesis of history and examination into operative management plan Ability to explain procedure and outcomes to patient and parents at an appropriate level To be able to take informed consent To construct an appropriate theatre list To follow the admission procedure
Technical and Procedural skill as assistant/ observer	

Topic	**Intra-operative care**
Category	Operative skills
Sub-category:	
Objective	*To ensure the trainee has reached a level of competence in a range of basic operative (including laparoscopic/thoracoscopic) procedures*
Knowledge	Anatomy to be encountered during procedure Steps involved in operative procedure Knowledge of alternative procedures in case of encountering difficulties Potential complications of procedure
Clinical Skills	Necessary hand-eye dexterity to complete procedure Appropriate use of assistance Communication with other members of theatre team Function and safe use of laparoscopic/thoracoscopic equipment Hazards of diathermy in minimal access surgery Use of the endoloop Intracorporeal or extracorporeal knot tying
Technical and Procedural skill as assistant/ observer	

Topic	**Post-operative care**
Category	Operative skills
Sub-category:	
objective	• To ensure the trainee has reached a level of competence in a range of basic

	operative procedures
Knowledge	Outcomes of procedure Likely post-operative progress from disease process and intervention Physiological and pathological changes in condition as a result of intervention
Clinical Skills	Assessment of patient and physiological parameters Appropriate intervention to deal with changing parameters Communication skills for dealing with team members, patients and parents Ability to prioritise interventions
Technical and Procedural skill as assistant/ observer	

Phase B Year 3

Revisit & Recapitulation of year 2 topic in terms of knowledge, skill and attitude along with Phase-B, year 3 topics. Phase-B, Year 3 consist of 8 (Eight) training modules and their academic curriculum.

Module 1

The principles of assessment and management of the paediatric surgical patient

- To assess the surgical patient
- To elicit a history that is relevant, concise, accurate and appropriate to the patient's problem
- To produce timely, complete and legible clinical records.
- To assess the patient adequately prior to operation and manage any pre-operative problems appropriately.
- To propose and initiate surgical or non-surgical management as appropriate.
- To take informed consent for straightforward cases.

Module 2

Peri-operative care of the paediatric surgical patient

- To manage patient care in the peri-operative period.
- To assess and manage preoperative risk.
- To take part in the conduct of safe surgery in the operating theatre environment.
- To assess and manage bleeding including the use of blood products.
- To care for the patient in the post-operative period including the assessment of common complications.
- To assess, plan and manage post-operative fluid balance
- To assess and plan perioperative nutritional management.

Module 3

Assessment and early treatment of the patient with trauma

- To safely assess the multiply injured patient.
- To safely assess and initiate management of patients with
    - traumatic skin and soft tissue injury
    - chest trauma
    - a head injury
    - a spinal cord injury
    - abdominal and urogenital trauma
    - vascular trauma
    - a single or multiple fractures or dislocations
    - burns

Module 4

Surgical care of the paediatric patient

- To assess and manage children with surgical problems, understanding the similarities and differences from adult surgical patients.
- To understand common issues of child protection and to take action as appropriate.

Module 5

Management of the dying patient

- To manage the dying patient appropriately.
- To understand consent and ethical issues in patients certified DNAR (do not attempt resuscitation)
- To manage the dying patient in consultation with the palliative care team.

Module 6

Organ and tissue transplantation

- To understand the principles of organ and tissue transplantation.
- To assess brain stem death and understand its relevance to continued life support and

.

Module 7

Professional behavior

- To provide good clinical care
- To be a good communicator
- To teach and to train
- To keep up to date and know how to analyse data
- To understand and manage people and resources within the health environment
- To promote good Health
- To understand the ethical and legal obligations of a surgeon

Module 8

- Area of special interest
- Acquired special skill
- Future Planning

Special Interest Overview

Paediatric urology is delivered in a number of different units in the Medical college Hospital and Different Institutions, either by surgeons whose entire workload consists of Paediatric Urology, or by those who undertake Paediatric Urology as the major focus of their carrier plans. The service is often focused in tertiary paediatric units, though a number of specific conditions are treated in their units. The majority of trainees entering this phase of training will have completed either the essential part of a paediatric surgical trainings or an adult urology programme.

Aim

The aim of this aspect of training is to deliver the knowledge skills and experience required by trainees who wish to focus their future practice either solely in the field of paediatric urology, or with any subspeciality of Paediatric Surgery.

Outcomes

At completion of this section of the programme the trainee will:

- Be able to manage the index conditions encountered in paediatric urological practice in Bangladesh
- Be able to formulate appropriate investigation and management strategies for children under his/her care
- Be able to undertake the operative management of the index conditions to the required level
- Be able to communicate these plans effectively to patients, parent, relevant colleagues
- Be able to interact appropriately with other members of the team
- Practice with integrity respect and compassion

Specific Technical Skills

The following list of procedures includes those that it is anticipated that a trainee completing the 2 year.
Module in paediatric urology would be competent to perform to level 4. This list follows from those procedures identified at earlier stages

- Pyeloplasty
- Partial Nephrectomy
- Management of renal calculi
- Operative ablation of valves
- Complex hypospadias repair
- Nephrectomy
- Reimplantation of ureters
- Operative management of impalpable testis
- Operative relief of urinary obstruction (e.g. stent insertion)

The following list is one of which every trainee must have exposure to, though depending on previous exposure and future career path, may not be required to be competent in the performance of individual procedures. (Skill Level 3 or 4)

- Closure of bladder exstrophy (specialist centre)
- Bladder augmentation
- Urethral sphincter insertion
- Epispadias repair (specialist centre)
- Gender re-assignment surgery

Module - 1
Assessment and management of the surgical patient

Objective

To demonstrate the relevant knowledge, skills and attitudes in assessing the patient and manage the patient, and propose surgical or non-surgical management.

Knowledge

The knowledge relevant to this section will be variable from patient to patient and is covered within the rest of the syllabus – see common surgical conditions in particular (Module 2). As a trainee develops an interest in a particular speciality then the principles of history taking and examination may be increasingly applied in that context.

Clinical Skills

- Surgical history and examination (elective and emergency)
- Construct a differential diagnosis
- Plan investigations
- Clinical decision making
- Team working and planning
- Case work up and evaluation; risk management
- Active participation in clinical audit events
- Appropriate prescribing
- Taking consent for intermediate level intervention; emergency and elective
- Written clinical communication skills
- Interactive clinical communication skills: patients
- Interactive clinical communication skills: colleagues

Module - 2
Peri-operative care

Objective

- To assess and manage preoperative risk
- To manage patient care in the peri-operative period
- To conduct safe surgery in the operating theatre environment
- To assess and manage bleeding including the use of blood products
- To care for the patient in the post-operative period including the assessment of common complications
- To assess, plan and manage post-operative fluid balance
- To assess and plan perioperative nutritional management

Knowledge

Pre-operative assessment and management:

- Cardiorespiratory physiology
- Diabetes mellitus and other relevant endocrine disorders
- Fluid balance and homeostasis
- Renal failure
- Pathophysiology of sepsis – prevention and prophylaxis
- Thromboprophylaxis
- Laboratory testing and imaging
- Risk factors for surgery and scoring systems
- Pre-medication and other preoperative prescribing
- Principles of day surgery

Intraoperative care:

- Safety in theatre including patient positioning and avoidance of nerve injuries
- Sharps safety
- Diathermy, laser use
- Infection risks
- Radiation use and risks
- Tourniquet use including indications, effects and complications
- Principles of local, regional and general anaesthesia
- Principles of invasive and non-invasive monitoring
- Prevention of venous thrombosis
- Surgery in hepatitis and HIV carriers
- Fluid balance and homeostasis

Post-operative care:

- Post-operative monitoring
- Cardio respiratory physiology
- Fluid balance and homeostasis
- Diabetes mellitus and other relevant endocrine disorders
- Renal failure
- Pathophysiology of blood loss
- Pathophysiology of sepsis including SIRS and shock
- Multi-organ dysfunction syndrome
- Post-operative complications in general
- Methods of postoperative analgesia

To assess and plan nutritional management

- Post-operative nutrition
- Effects of malnutrition, both excess and depletion
- Metabolic response to injury
- Methods of screening and assessment of nutritional status
- Methods of enteral and parenteral nutrition

Haemostasis and Blood Products:

- Mechanism of haemostasis including the clotting cascade
- Pathology of impaired haemostasis e.g. haemophilia, liver disease, massive haemorrhage
- Components of blood
- Alternatives to use of blood products
- Principles of administration of blood products
- Patient safety with respect to blood products

Coagulation, deep vein thrombosis and embolism:

- Clotting mechanism (Virchow Triad)
- Effect of surgery and trauma on coagulation
- Tests for thrombophilia and other disorders of coagulation
- Methods of investigation for suspected thromboembolic disease
- Principles of treatment of venous thrombosis and pulmonary embolism including anticoagulation
- Role of V/Q scanning, CTpulmonary angiography, D-dimer and thrombolysis
- Place of pulmonary embolectomy
- Prophylaxis of thromboembolism:
- Risk classification and management of DVT
- Knowledge of methods of prevention of DVT, mechanical and pharmacological

Antibiotics:

- Common pathogens in surgical patients
- Antibiotic sensitivities
- Antibiotic side-effects
- Principles of prophylaxis and treatment

Metabolic and endocrine disorders in relation to perioperative management

- Pathophysiology of thyroid hormone excess and deficiency and associated risks from surgery
- Causes and effects of hypercalcaemia and hypocalcaemia
- Complications of corticosteroid therapy
- Causes and consequences of Steroid insufficiency
- Complications of diabetes mellitus
- Causes and effects of hyponatraemia
- Causes and effects of hyperkalaemia and hypokalaemia

Clinical Skills

Pre-operative assessment and management:

- History and examination of a patient from a medical and surgical standpoint
- Interpretation of pre-operative investigations
- Management of co morbidity
- Resuscitation
- Appropriate preoperative prescribing including premedication

Intra-operative care:

- Safe conduct of intraoperative care
- Correct patient positioning
- Avoidance of nerve injuries
- Management of sharps injuries
- Prevention of diathermy injury
- Prevention of venous thrombosis

Post-operative care:

Writing of operation records

- Assessment and monitoring of patient's condition
- Post-operative analgesia
- Fluid and electrolyte management
- Detection of impending organ failure
- Initial management of organ failure
- Principles and indications for Dialysis
- Recognition, prevention and treatment of post-operative complications

Haemostasis and Blood Products:

- Recognition of conditions likely to lead to the diathesis
- Recognition of abnormal bleeding during surgery
- Appropriate use of blood products
- Management of the complications of blood product transfusion

Coagulation, deep vein thrombosis and embolism

- Recognition of patients at risk
- Awareness and diagnosis of pulmonary embolism and DVT
- Role of duplex scanning, venography and d-dimer measurement
- Initiate and monitor treatment of venous thrombosis and pulmonary embolism
- Initiation of prophylaxis

Antibiotics:

- Appropriate prescription of antibiotics

Assess and plan preoperative nutritional management

- Arrange access to suitable artificial nutritional support, preferably via a
- nutrition team including Dietary supplements, Enteral nutrition and Parenteral nutrition

Metabolic and endocrine disorders

- History and examination in patients with endocrine and electrolyte disorders
- Investigation and management of thyrotoxicosis and hypothyroidism
- Investigation and management of hypercalcaemia and hypocalcaemia
- Peri-operative management of patients on steroid therapy
- Peri-operative management of diabetic patients
- Investigation and management of hyponatraemia
- Investigation and management of hyperkalaemia and hypokalaemia

Technical Skills and Procedures

Central venous line insertion
Urethral catheterisation

Module- 3

Assessment and management of patients with trauma (including the multiply injured patient)

Objective

Assess and initiate management of patients

- Who have sustained chest trauma
- who have sustained a head injury
- who have sustained a spinal cord injury
- who have sustained abdominal and urogenital trauma
- who have sustained vascular trauma
- who have sustained a single or multiple fractures or dislocations
- who have sustained traumatic skin and soft tissue injury
- who have sustained burns
- Safely assess the multiply injured patient.
- Contextualize any combination of the above
- Be able to prioritise management in such situation as defined by ATLS, APLS etc.

Knowledge

General

- Scoring systems for assessment of the injured patient
- Major incident triage
- Differences In children

Shock

- Pathogenesis of shock
- Shock and cardiovascular physiology
- Metabolic response to injury
- Adult respiratory distress syndrome
- Indications for using uncross matched blood Wounds and soft tissue injuries
- Gunshot and blast injuries
- Stab wounds
- Human and animal bites
- Nature and mechanism of soft tissue injury
- Principles of management of soft tissue injuries
- Principles of management of traumatic wounds
- Compartment syndrome

Burns

- Classification of burns
- Principle of management of burns

Fractures

- Classification of fractures
- Pathophysiology of fractures
- Principles of management of fractures
- Complications of fractures
- Joint injuries

Organ specific trauma

- Pathophysiology of thoracic trauma
- Pneumothorax
- Head injuries including traumatic intracranial haemorrhage and brain injury
- Spinal cord injury
- Peripheral nerve injuries
- Blunt and penetrating abdominal trauma
- Including spleen
- Vascular injury including iatrogenic injuries and intravascular drug abuse
- Crush injury
- Principles of management of skin loss including use of skin grafts and skin flaps
- Clinical Skills

General

History and examination

- Investigation
- Referral to appropriate surgical subspecialties
- Resuscitation and early management of patient who has sustained thoracic, head, spinal, abdominal or limb injury according to ATLS and APLS guidelines
- Resuscitation and early management of the multiply injured patient Specific problems
- Management of the unconscious patient
- Initial management of skin loss
- Initial management of burns
- Prevention and early management of the compartment syndrome

Technical Skills and Procedures

- Central venous line insertion
- Chest drain insertion
- Diagnostic peritoneal lavage
- Urethral catheterisation
- Suprapubic catheterisation

Module -4

Surgical care of the Paediatric patient

Objective

- To assess and manage children with surgical problems, understanding the similarities and differences from adult surgical patients
- To understand the issues of child protection and to take action as appropriate

Knowledge

- Physiological and metabolic response to injury and surgery
- Fluid and electrolyte balance
- Thermoregulation Safe prescribing in children
- Principles of vascular access in children
- Working knowledge of trust and Local Safeguarding Children Boards (LSCBs) and Child Protection Procedures
- Basic understanding of child protection law
- Understanding of Children's rights
- Working knowledge of types and categories of child maltreatment, presentations, signs and other features (primarily physical, emotional, sexual, neglect, professional)
- Understanding of one's personal role, responsibilities and appropriate referral patterns in child protection
- Understanding of the challenges of working in partnership with children and families
- Recognise the possibility of abuse or maltreatment
- Recognise limitations of own knowledge and experience and seek appropriate expert advice
- Urgently consult immediate senior in surgery to enable referral to paediatricians
- Keep appropriate written documentation relating to child protection matters
- Communicate effectively with those involved with child protection, including children and their families

Clinical Skills

- History and examination of paediatric surgical patient
- Assessment of respiratory and cardiovascular status
- Undertake consent for surgical procedures (appropriate to the level of training) in paediatric patients

Module - 5

Management of the dying patient

Objective

- Ability to manage the dying patient appropriately.
- To understand consent and ethical issues in patients certified DNAR (do not attempt resuscitation)
- Palliative Care: Good management of the dying patient in consultation with the palliative care team.

Knowledge

Palliative Care:

- Care of the terminally ill
- Appropriate use of analgesia, anti-emetics and laxatives

Principles of organ donation:

- Circumstances in which consideration of organ donation is appropriate
- Principles of brain death
- Understanding the role of the coroner and the certification of death

Clinical Skills

Palliative Care:

- Symptom control in the terminally ill patient

Principles of organ donation:

- Assessment of brain stem death
- Certification of death

Module- 6

Organ and Tissue transplantation

Objective

To understand the principles of organ and tissue transplantation

Knowledge

- Principles of transplant immunology including tissue typing, acute, hyperactute and chronic rejection
- Principles of immunosuppression
- Tissue donation and procurement
- Indications for whole organ transplantation

Year 3 Topics

Topic	Groin conditions
Category	General Surgery of Childhood
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with 'groin • pathology' • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention if required • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source
Knowledge	INGUINAL HERNIA: Developmental anatomy Natural history Indications and outcomes of surgery HYDROCELE: Developmental anatomy Natural history Place of conservative management Indications and outcomes of surgery UNDESCENDED TESTIS: Developmental anatomy Natural history of undescended testis and retractile testis Place of conservative management Indications and outcomes of surgery PENILE CONDITIONS: Developmental anatomy Natural history Place of conservative management Indications and outcomes of surgery ACUTE SCROTUM: Natural history Place of conservative management Indications and outcomes of surgery
Clinical Skills	INGUINAL HERNIA: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups HYDROCELE: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups UNDESCENDED TESTIS: Ability to assess child and reach appropriate diagnosis Ability to differentiate true undescended testis from retractile variant Ability to form a treatment plan Ability to communicate with all relevant groups PENILE CONDITIONS:

	Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups ACUTE SCROTUM: Ability to assess child and reach appropriate diagnosis Ability to form a treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Hernia: Inguinal herniotomy (non-neonatal) Inguinal hernia (neonatal) Hydrocele: Surgery for hydrocele Penile Conditions: Prepucioplasty Circumcision Undescended testis: Surgery for undescended testis Acute scrotum: Surgery for acute scrotum

Topic	**Abdominal wall pathologies**
Category	General Surgery of Childhood
Sub-category:	
Objective	• *To be* able to assess a child presenting to the OP clinic or acutely with abnormalities of the abdominal wall • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention if required • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source
Knowledge	UMBILICAL HERNIA: Developmental anatomy Natural history Place of conservative management Indications and outcomes of surgery SUPRA-UMBILICAL HERNIA: developmental anatomy Natural history to include contrast with umbilical hernia Indications and outcomes of surgery EPIGASTRIC HERNIA: Developmental anatomy Natural history Indications and outcomes of surgery
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Umbilical hernia: Repair of umbilical hernia Epigastric hernia: Repair of epigastric hernia Repair of epigastric hernia

Topic	Head and neck swellings
Category	General surgery of childhood
Sub-category	Management of benign surgical conditions
Objective	• To be able to assess a child presenting to the OP clinic or acutely with a head/neck swelling as the primary presenting symptom • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention if required • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source
Knowledge	Patterns of symptoms and relation to likely pathology, relevant anatomy and age of child Relevance of embryonic development of head and neck structures Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Excision skin lesion Excision/biopsy of lymph nodes Surgery for thyroglossal cyst Surgery for branchial cysts and branchial remnants

Topic	Different Access
Category	General Surgery of Childhood
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Vascular access: Central venous lines and ports (including percutaneous) Dialysis: PD catheter insertion/removal

Topic	Pyloric stenosis
Category	Gastrointestinal
Sub-category:	
Objective	• *To be able to assess an infant with vomiting* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to make a diagnosis of pyloric stenosis* • *To be able to treat the child appropriately up to and including operative intervention if required* • *To be able to communicate the above information at the required level to parents, other team members/referral source*
Knowledge	Patterns of symptoms and relation to likely pathology Significance of bile stained vomiting Differential diagnosis Place and value of investigations Understanding of the biochemical changes associated with the condition
Clinical Skills	Ability to assess ill child including an assessment of severity of dehydration Ability to safely correct the dehydration and biochemical abnormalities Ability to communicate with ill child (see Section 1)

	Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Pyloromyotomy -

Topic	**Gastro-oesophageal reflux**
Category	Gastrointestinal
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Pathophysiology Investigation and management Indications for operative intervention
Clinical Skills	Ability to synthesise history and investigations into appropriate management plan Ability to communicate information to parents/child
Technical and Procedural skill as assistant/ observer	Oesophageal dilatation Gastrostomy -open PEG (insertion/removal) Open or laparoscopic fundoplication Feeding jejunostomy Oesophago gastric disconnection

Topic	**Abdominal pain**
Category	Gastrointestina
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Open and Laparoscopic appendicectomy Operative reduction of intussusception

Topic	Constipation
Caoryteg	Gastrointestinal
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis to include medical anomalies and socio-psychological aspects of symptom Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups. To include community aspects of further management
Technical and Procedural skill as assistant/ observer	Rectal Biopsy Manual evacuation EUA rectum Anal stretch ACE procedure

Topic	Gastro-intestinal bleeding
Category	Gastrointestinal
Sub-category	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Colonoscopy Sigmoidoscopy Small bowel resection/anastomosis – open and laparoscopically assisted (Meckels)

Topic	Intestinal obstruction
Category	Gastrointestinal
Sub-category:	
Objective	• *To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to treat the child appropriately up to and including operative intervention in selected cases* • *To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source* • *To be able to practice with integrity, respect and compassion*
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Laparotomy Adhesiolysis Small bowel resection/anastomosis

Topic	Inflammatory bowel disease
Category	Gastrointestinal
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Colonoscopy Sigmoidoscopy Small bowel resection/anastomosis Right hemicolectomy Left hemicolectomy Total colectomy Pouch formation

Topic	Short bowel syndrome
Category	Gastrointestinal
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child (see Section 1) Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Bowel lengthening procedures

Topic	Liver/biliary disease
Category	Gastrointestina
Sub-category:	
Objective	• To understand the presenting symptoms of common gastrointestinal conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations Place of operative intervention, and associated outcomes
Clinical Skills	Ability to assess ill child Ability to communicate with ill child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Cholecystectomy Kasai procedure

Topic	Urinary tract infection
Category	Urology
Sub-category:	
Objective	• *To be able to assess a child presenting to the OP clinic or acutely with symptoms* referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and

	management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Relevance of different symptom patterns Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	**Haematuria**
Category	Urology
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Cysto-urethroscopy

Topic	**Hypospadias**
Category	Urology
Sub-category	
Objective	• *To* be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Different anatomical variants

	Place and value of investigations/ operative intervention
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair distal hypospadias Repair proximal hypospadias Repair urethral fistula

Topic	**Upper tract obstruction (to include Pelvi-ureteric junction obstruction and Vesico-ureteric junction obstruction)**
Category	Urology
Sub-category:	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Place and value of investigations/ operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Pyeloplasty Nephrectomy Heminephrectomy Insertion of percutaneous nephrostomy – with ultrasound guidance Insertion of open nephrostomy Insertion of open nephrostomy Insertion of JJ stent Ureteric reimplantation

Topic	**Posterior urethral valves**
Category	Urology
Sub-category:	
Objective	To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract To be able to formulate a differential diagnosis and an investigation and management plan To be able to treat the child appropriately up to and including operative intervention in selected cases To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Place and value of investigations/ operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups

Technical and Procedural skill as assistant/ observer	Destruction of PUV Formation/closure of vesocistomy

Topic	**Urinary tract calculus disease**
Category	Urology
Sub-category	
Objective	• *T*o be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Aetiological and biochemical factors Place and value of investigations/ operative and non-operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Interventional management of urolithiasis

Topic	**Bladder dysfunction and neuropathic bladder**
Category	Urology
Sub-category	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups Ability to assess child Ability to form a viable investigation and treatment plan) Ability to communicate with all relevant groups

Technical and Procedural skill as assistant/ observer	Cysto-urethroscopy Vesicostomy Closure of vesicostomy Suprapubic catheter Endoscopic cauterisation of lesion of bladder Endoscopic cauterisation of lesion of bladder Ileal bladder reconstruction Colonic bladder reconstruction Ureteric diversion Mitrofanoff procedure

Topic	**Renal failure**
Category	Urology
Sub-category:	
Objective	• *To be able* to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of referral criteria to renal medical colleagues
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical Skills and Procedures	Ureteric un-diversion Haemodialysis catheter insertion PD catheter insertion/remova

Topic	**Bladder exstrophy (to include outlet anomalies e.g. epispadias)**
Category	Urology
Sub-category	
Objective	• To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to treat the child appropriately up to and including operative intervention in selected cases • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Closure of bladder neck Repair of bladder exstrophy Repair of epispadias

Topic	Duplication of urinary tract
Category	Urology
Sub-category:	
Objective	• *To be able to assess a child presenting to the OP clinic or acutely with symptoms referable to the urinary tract* • *To be able to formulate a differential diagnosis and an investigation and management plan* • *To be able to treat the child appropriately up to and including operative intervention in selected cases* • *To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source* • *To be able to practice with integrity, respect and compassion*
Knowledge	Likely modes of presentation Embryological derivation and anatomical variants Place and value of investigations/ operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Open +/- laparoscopic hemi-nephrectomy Excision of ureterocele Endoscopic incision of ureterocele

Topic	Urethral meatus
Category	Urology
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Meatotomy Urethral dilatation

Topic	Epispadias
Category	Urology
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Repair of epispadias

Topic	Vesico-ureteric reflux
Category	Urology
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Cysto-urethroscopy STING/deflux Ureteric reimplantation

Topic	**Small bowel duplications**
Category	Neonatal Surgery
Sub-category:	
Objective	• *To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period* • *To be able to construct an appropriate management plan for these children* • *To understand the place of operative management in the neonatal period and be able to carry this out in selected cases* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Intestinal resection/anastomosis

Topic	**Sacro coccygeal teratoma**
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of prenatal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Excision of sacro coccygeal teratoma

Topic	Congenital diaphragmatic hernia
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counseling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Operation for diaphragmatic hernia (neonate) and eventration

Topic	Intestinal Atresias
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Duodeno- duodenostomy Intestinal resection/anastomosis Stoma formation

Topic	Meconium Ileus
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases

	• To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal + genetic counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Operation for meconium ileus

Topic	**Malrotation**
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Correction of malrotation

Topic	**Hirschsprung's disease**
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of genetic counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups

Technical and Procedural skill as assistant/ observer	Rectal biopsy Rectal washout Trans-anal pull through – open or laparoscopically assisted Pull through (Duhamel procedure, Soave, Swenson)

Topic	**Oesophageal Atresia and Tracheo-oesophageal fistula**
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Operation for oesophageal atresia Repair of H fistula Repair of recurrent fistula Oesophageal dilatation (neonatal) Oesophageal replacement Aortopexy

Topic	**Anorectal Malformations**
Category	Neonatal Surgery
Sub-category	
Objective	• *To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period* • *To be able to construct an appropriate management plan for these children* • *To understand the place of operative management in the neonatal period and be able to carry this out in selected cases* • *To be able to practice with integrity, respect and compassion*
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Anoplasty Sigmoid colostomy

Topic	Necrotising Enterocolitis
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation Patho-physiology of the condition Associated anomalies Outcome data on the condition Differing management strategies
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Laparotomy and proceed Intestinal resection/anastomosis

Topic	Neonatal Abdominal Wall Defects
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of pre-natal counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair of gastroschisis Application of preformed silo Repair of exomphalos

Topic	Disorders of sex development
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion

Knowledge	Mode of presentation both pre- and post natal Patho-physiology of the condition and anatomical variants Associated anomalies Outcome data on the condition Differing management strategies Role of genetic counselling
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	**Antenatal management**
Category	Neonatal Surgery
Sub-category:	
Objective	• To understand the diagnosis and management of children presenting with congenital abnormalities in the neonatal period • To be able to construct an appropriate management plan for these children • To understand the place of operative management in the neonatal period and be able to carry this out in selected cases • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation of different conditions Place and value of investigations Types of and indications for antenatal intervention Role of ante-natal counselling
Clinical Skills	Ability to counsel and inform parents Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	**Wilms Tumour**
Category	Oncology
Sub-category:	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Nephro-ureterectomy/nephrectomy for Wilms

Topic	Neuroblastoma
Category	Oncology
Sub-category	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Surgery for neuroblastoma

Topic	Hepatoblastoma
Category	Oncology
Sub-category	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Surgery for hepatoblastoma

Topic	Soft tissue tumours
Category	Oncology
Sub-category	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups

Technical and Procedural skill as assistant/ observer	Local excision soft tissue tumour

Topic	**Haematological malignancies**
Category	Oncology
Sub-category:	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Management strategies and basic outcome data of treatment modalities
Clinical Skills	Ability to assess child Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Cervical Lymph node biopsy

Topic	**Benign tumours**
Category	Oncology
Sub-category:	
Objective	• To understand the presentation and management of childhood tumours • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to practice with integrity, respect and compassion
Knowledge	Mode of clinical presentation Differential diagnosis Relevant basic science knowledge of oncogenesis Outcome data of treatment modalities Role of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical Skills and Procedures	Oopherectomy Oophero-salpingectomy

Topic	**Generic procedures**
Category	Oncology
Sub-category:	
Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Tumour biopsy

Topic	**Adrenal gland**
Category	Endocrine conditions
Sub-category:	

Objective	
Knowledge	
Clinical Skills	
Technical and Procedural skill as assistant/ observer	Adrenalectomy

Topic	**Disease of the thyroid gland**
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Thyroidectomy

Topic	**Parathyroid disease**
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Diabetes
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Disorders of Growth
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	

Topic	Disorders of secondary sexual development
Category	Endocrine conditions
Sub-category:	
Objective	• To understand the presenting symptoms of endocrine conditions in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan

	• To be able to identify the need for surgery and influence of endocrine conditions on surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Subcutaneous mastectomy

Topic	**Chest wall anomalies**
Category	Thoracic Anomalies
Sub-category:	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Repair pectus excavatum Repair pectus carinatum

Topic	**Congenital and acquired lung abnormalities including management of empyema**
Category	Thoracic Anomalies
Sub-category:	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations

	Knowledge of developmental embryology and pertinent anatomy Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Thoracotomy Open biopsy of lung Pulmonary lobectomy Excision of extra lobar sequestration Aspiration of pleural cavity Insertion of open chest drain Insertion of percutaneous chest drain Open/thoracoscopic pleural debridement Rigid bronchoscopy

Topic	**Tracheal anomalies**
Category	Thoracic Anomalies
Sub-category:	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of developmental embryology and pertinent anatomy Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Tracheostomy Rigid bronchoscopy Fibreoptic bronchoscopy

Topic	**Inhaled /aspirated /ingested foreign body**
Category	Thoracic Anomalies
Sub-category:	
Objective	• To understand the presenting symptoms of thoracic anomalies in childhood and their management • To be able to formulate a differential diagnosis and an investigation and management plan • To identify the place of surgery • To be able to communicate the above information at the required level to patients/ parents/ other team members/ referral source • To be able to practice with integrity, respect and compassion
Knowledge	Likely modes of presentation Differential diagnosis

	Place and value of investigations Knowledge of developmental embryology and pertinent anatomy Knowledge of appropriate referral pathways Outcomes of surgery
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan Ability to communicate with all relevant groups
Technical and Procedural skill as assistant/ observer	Rigid bronchoscopic removal of FB from bronchus

Topic	**Pre-operative care**
Category	Operative skills
Sub-category:	
Objective	To ensure the trainee has reached a level of competence in a range of basic operative procedures.
Knowledge	Indications for surgery Required preparation for surgery to include necessary pre-operative investigations Outcomes and complications of surgery Knowledge of the admission process
Clinical Skills	Synthesis of history and examination into operative management plan Ability to explain procedure and outcomes to patient and parents at an appropriate level To be able to take informed consent To construct an appropriate theatre list To follow the admission procedure
Technical and Procedural skill as assistant/ observer	

Topic	**Intra-operative care**
Category	Operative skills
Sub-category:	
Objective	To ensure the trainee has reached a level of competence in a range of basic operative procedures.
Knowledge	Anatomy to be encountered during procedure Steps involved in operative procedure Knowledge of alternative procedures in case of encountering difficulties Potential complications of procedure Anatomy to be encountered during procedure Steps involved in operative procedure Knowledge of alternative procedures in case of encountering difficulties Potential complications of procedure
Clinical Skills	Necessary hand-eye dexterity to complete procedure Appropriate use of assistance Communication with other members of theatre team Necessary hand-eye dexterity to complete procedure Appropriate use of assistance Communication with other members of theatre team
Technical and Procedural skill as assistant/ observer	Open and laparoscopic operative skills

Topic	Post-operative care
Category	Operative skills
Sub-category:	
Objective	To ensure the trainee has reached a level of competence in a range of basic operative procedures.
Knowledge	Outcomes of procedure Likely post-operative progress from disease process and intervention Physiological and pathological changes in condition as a result of intervention
Clinical Skills	Assessment of patient and physiological parameters Appropriate intervention to deal with changing parameters Communication skills for dealing with team members, patients and parents Ability to prioritise interventions
Technical and Procedural skill as assistant/ observer	

Topic	Leadership
Category	Management
Sub-category:	
Objective	• *To understand the current structure and function of the NHS* • *To develop an understanding of leadership qualities required of a consultant* • *To develop the ability to support colleagues and peers in the delivery of care*
Knowledge	Differences between leadership and management Different styles of leadership and their uses Personal leadership styles Roles of leaders in teams
Clinical Skills	Ability to identify own style of leadership Ability to utilise appropriate style to management of managerial issues Ability to lead a team of peers and colleagues in a project (research/audit/managerial)
Technical and Procedural skill as assistant/ observer	

Topic	Supporting training
Category	Management
Sub-category	
Objective	• *To develop the skills required to support training of peers and colleagues*
Knowledge	Principles of coaching, training and mentoring Principles and uses of assessment and appraisal Differing styles of feedback and their appropriate use Knowledge of career pathways Indicators of 'poor performance' Teaching styles and their uses
Clinical Skills	Ability to train junior trainees Ability to provide appropriate guidance to trainees through use of techniques of feedback, appraisal and assessment Ability to support poor performers appropriately Ability to give career advice Ability to support colleagues through use of appraisal and revalidation mechanisms
Technical and Procedural skill as assistant/ observer	

Topic	Interview process
Category	Management
Sub-category:	
Objective	*To be able to participate appropriately in interview process*
Knowledge	Role of interview in selecting candidates for training Use of different types of interview Role of panel members Legal requirements of panel members with respect to Employment and Equal Opportunities legislation
Clinical Skills	Ability to ask appropriate questions depending on style of interview Ability to provide feedback for both successful and unsuccessful candidates Completion of paperwork for committee
Technical Skills and Procedures	

Topic	Urinary Tract Infection
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Relevance of different symptom patterns Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Haematuria
Category	Paediatric Urology Special Interest
Sub-category	
Objective	
Knowledge	Patterns of symptoms and relation to likely pathology and age of child Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Hypospadias
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Different anatomical variants Place and value of investigations/operative intervention
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Upper tract obstruction(to include Pelvi-ureteric junction obstruction and Vesico-ureteric junction obstruction)
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Place and value of investigations/operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Posterior urethral valves
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Place and value of investigations/operative intervention Differential Diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	**Urinary tract calculus disease**
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Aetiological and biochemical factors place and value of investigations/operative and non-operative intervention Differential Diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups, including adult urological services Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	**Bladder dysfunction (including neuropathic bladder)**
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of appropriate referral pathways
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	**Renal Failure**
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations Knowledge of referral criteria to renal medical colleagues
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Bladder exstrophy (to include outlet anomalies e.g. epispadias)
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Differential diagnosis Place and value of investigations
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Duplication of urinary tract
Category	Paediatric Urology Special Interest
Sub-category	
Objective	
Knowledge	Likely modes of presentation Embryological derivation and anatomical variants Place and value of investigations/operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	

Topic	Disorders of sex development
Category	Paediatric Urology Special Interest
Sub-category:	
Objective	
Knowledge	Likely modes of presentation Embryological derivation and anatomical variants Place and value of investigations/operative intervention Differential diagnosis
Clinical Skills	Ability to assess child Ability to form a viable investigation and treatment plan, including appropriate range of operative interventions Ability to communicate with all relevant groups Ability to independently interpret the results of investigations and act on same
Technical and Procedural skill as assistant/ observer	