Master of Surgery: Urology
TRAINING PROGRAM

SIMS-SIUT

Sindh Institute of Medical Sciences and

Sindh Institute of Urology and Transplantation

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1. AIM AND OBJECTIVES

AIM

The aim is to train candidates as competent Urologists able to provide specialist care independently. In addition, they should be good teachers and researchers.

OBJECTIVES

At the end of the five years training in Urology a candidate will be able to:

- Obtain a pertinent history.
- Perform a physical examination correctly.
- Order appropriate investigations and interpret the results.
- Formulate a working diagnosis.

  Develop a plan of action on whether the patient requires
  - ambulatory care or hospitalization
  - seek consultation when needed and refer to other health professionals
  - emergency care including life saving measures

- Candidate will be able to:
  - Perform specified surgical procedures independently and competently.
  - Deal effectively and promptly with complications, which may occur during the course of the disease.
  - Maintain medical records of patients including diagnoses, symptoms, examinations, etc., and an ICD code (according to the International Classification of Diseases)
  - Carry out effective and efficient management of emergency situations.

- They will be able to:
  - Undertake research and publish findings.
  - Acquire new information, assess its utility and make appropriate applications.
  - Recognize the role of teamwork and function as an effective members and leader of the team.
  - Advice the community on matters related to promoting health and preventing disease.
  - Train paramedical professionals and other junior members of the team.

2. ELIGIBILITY CRITERIA

- MBBS from an institution recognized by the PMC/PMDC.

- One year house job in Medicine and Surgery in an hospital recognized by the PMC/PMDC.
- One year experience in relevant field.
- A valid Registration Certificate from the PMC/PMDC.

Induction Process

- Candidates will be inducted once a year.
- The application for admission will be invited through advertisement in print and electronic media.
- The advertisement will appear in September of each year.

Selection Process

- All the applicants to MS Urology Program must appear for a written entry test.
- The written evaluation test will be scheduled in the last week of November each year.
- Those who have secured at least 60% marks will be shortlisted and called for an interview in the second week of December and the process of selection will be completed in the first week of January each year.

Admission Policy

- A limited number of students will be enrolled each year
- The SIMS-SIUT will approve supervisors for the MS courses.

3. TEACHING AND TRAINING

The MS Urology Program is a competency based five year course. On completion of the training program, Urology trainees acquire the necessary skills and knowledge in a variety of settings and situations, and are expected to demonstrate competence in all aspects. The specific training component focus on establishing clearly defined standards of knowledge and skills required to practice Urology at secondary and tertiary care levels with proficiency in basic and applied clinical sciences, intensive care and emergency (A&E) medicine related to Urology and complementary surgical disciplines.

3.1 Teaching Strategies

The participation of trainee is ensured at all levels and phases of the training. Online and offline methods of communication are used to engage the students as well as the faculty members. During training, trainees are encouraged to act as a group and adopt a multidisciplinary team approach in solving problems. All training is supervised.

Training strategies includes:

- Core urology lectures.
- Postings in outpatient clinics, wards & operating theatres.
- Weekly quiz based on core urology lectures.
- Self-audits through e-logs.
- Modular formative and summative exams.
- Journal club presentations.
- Group discussions.
- Grand rounds.
- Uro-oncology Tumor board.
- Simulation based surgical teaching.

3.2 Training Program Overview

The Program is divided into Phase I and Phase II.

Phase I

The **first two** years of the program comprise of rotations to various subunits of general surgery and related disciplines to build a strong foundation and understanding of basic surgical principles of management. This is achieved by:

- Providing full background knowledge of general surgery.
- Introducing basic surgical principles, appropriate management, pre and post-operative care of surgical patients.
- Introducing surgical pathology.

- During the Phase I the trainee will rotate through the following units:

1.	Hepatobiliary surgery	4 months
2.	Colorectal surgery	4 months
3.	Trauma and Orthopedic surgery	6 months
4.	Vascular surgery/Angioaccess	4 months
5.	Uroradiology	2 months
6.	Intensive care	2 months
7.	Nephrology/Dialysis	2 months

- By the end of the 2nd year, the trainee must select a research topic and submit it for approval to the Department of Research.

- A quarterly formative assessment of the trainee is submitted by the supervisor to the Departmental Committee.
- At the end of Phase I the trainees will appear for the Summative Mid-term Assessment (MCQs paper I and II and TOACS).

Phase II

Phase II comprises of 3rd, 4th and 5th year of clinical training covering knowledge and skills required for the practice of Urology with an emphasis on urological surgical training with higher level of competence in surgical procedures and rotations in Urology subunits. In the fifth year, in addition to research and thesis submission, trainees are expected to work independently under supervision, demonstrating leadership, team work and teaching competencies.

In this phase, the trainees will rotate within the Department of Urology in:

1.	General Urology (Adult)	12 months
2.	General Urology (Pediatric)	6 months
3.	MIS/Endourology	4 months
4.	Transplantation	4 months
5.	Laparoscopy/Robotics	4 months
6.	Uro-oncology	6 months

- At the end of Phase II the trainees will appear for the summative final examination of MS Urology (Theory examination, TOACS/OSCE, Long case and Short case, Thesis presentation)

In the **third year** candidates in the various Urology subunits will:

- Take a focused problem oriented history and do a physical examination.
- Reach a clinical diagnosis.
- Attend urology clinics (general urology, stone, uro-oncology, pediatric urology, prostate and stricture).
- Participate in teaching rounds, case discussion, seminars and teaching lectures.
- Be posted in the urology emergency room.
- Interpret ultrasound, IVU, CT scan, urodynamics and other biochemical tests, stone analysis.
- Perform catheterization, urethral dilatation, cystoscopy and retrograde uretero pyelography.
- Perform haemodialysis and peritoneal dialysis
- Perform subclavian and Internal Jugular angio access for haemodialysis.

- Perform the following surgical procedures and take pre and post-operative care of patients:
    - Suprapubic cystostomy
    - Cystolithotomy; percutaneous cystolithotomy, transurethral cystolitholapaxy
    - Ureterolithotomy
    - Bladder biopsy.
    - Hydrocele drainage.
    - Testicular biopsy.
    - Subcapsular orchidectomy.
    - Varicocele ligation.
    - Percutaneous nephrostomy placement.
    - DJ stenting.
    - Drainage of renal abscess.

- They will acquire knowledge and skills in supervised clinical practice in the following:
    - Renal surgery, reflux surgery, pediatric surgery
    - Experience and participate in various endoscopic procedures: optical urethrotomy, cystolithoclast, ureterorenoscopy (URS), TURP, PCNL, ERBG, stent placement and removal
    - ESWL (How to perform ESWL on various lithotriptor machines).
    - Introduction to urological trauma and emergencies.
    - Module in biostatistics and behavioral sciences.

- Research:

  In Phase Two, having selected an approved thesis topic by the end of the 2nd year, the trainees can start data collection and complete theses under the guidance of their supervisors.

In **fourth year** of the program in addition to research, the trainee will be exposed to the following:

- Transplant surgery.
- Laparoscopic surgery.
- Robotic surgery.
- Pediatric unit rotation.

- The trainee is exposed to clinical practice in various surgical procedures independently or under supervision like TURP, TURBT, PNL, URS, cancer surgery, renal transplant surgery, laser surgery, laparoscopy & percutaneous surgery.
- Exposure to transplant clinic, wards and transplant surgery.

- Tumor surgery, radical nephrectomy, nephron sparing surgery, cystectomy, radical prostatectomy, adrenalectomy.
- Reconstructive surgery: cystoplasty, ureteroplasty, urethroplasty, pyeloplasty.
- Urodynamic disorders.

In **fifth year** the emphasis is on higher levels of competence with an increasing number of cases done independently. The trainee is expected to demonstrate under supervision leadership and decision making in:

- Filter clinic.
- Transplant OPD.
- Oncology theatre.
- Transplant theater.
- TURP-URS-optical urethrectomy.
- PCNL-ERBG.
- Open surgery.
- Open nephrectomy.
- Renal transplant bed and ureter.

4. CURRICULUM

CONTENT OF TRAINING IN GENERAL SURGERY: these include Colorectal surgery Hepatobiliary surgery, Trauma/Orthopedic, Vascular surgery/Angioaccess, Uroradiology, Intensive care and Nephrology/Dialysis.

General Training Objectives:

Trainees should acquire:

a) Clinical and operative competence in both emergency and elective general surgery.
b) Knowledge and experience to make appropriate referrals.
c) Competence to be responsible for both the emergency admissions in general surgery and manage elective referrals.
d) Knowledge of the basic sciences related to general surgery including relevant specialist applied anatomy.
e) Knowledge of palliative care.

4.1 Phase I

4.1.1 General Surgical Topics include the following:

- History of Surgery.

- Fluids and electrolyte balance and acid-base metabolism.
- Wound healing and wound management.
- Pathophysiology and management of shock.
- Principles of operative surgery: asepsis, sterilization and antiseptics.
- Surgical infections and antibiotics.
- Nutrition and metabolism.
- Principles of burn management.
- Principles of oncology.
- Principles of laparoscopy and endoscopy.
- Haemostasis, blood transfusions.
- Trauma: Assessment of polytrauma, triage, basic and advanced trauma.
- Basic principles of anaesthesia.
- Hernias: Types of hernias, repair techniques.

4.1.2 Peri-Operative Management:

Pre-operative Management:

- Assessment of fitness for anaesthesia and surgery.
- Tests of respiratory, cardiac and renal function.
- Management of associated medical conditions, eg: diabetes; respiratory disease; cardiovascular disease; malnutrition; anaemia; steroids; anticoagulants.

Infections:

- Pathophysiology of the body's response to infection.
- Sources of surgical infection; prevention and control.
- Surgically important micro-organisms.
- Principles of asepsis and antisepsis.
- Surgical sepsis and its prevention.
- Aseptic techniques.
- Skin preparation.
- Antibiotic prophylaxis.
- Sterilization.

Investigative and Operative Procedures:

- Excision of cysts and benign tumours of skin and subcutaneous tissue.

- Principles of techniques of biopsy.
- Suture and ligature materials.
- Drainage of superficial abscesses.
- Basic principles of anastomosis.

Skin and Wounds:

- Pathophysiology of wound healing
- Classification of surgical wounds
- Principles of wound healing
- Incisions and their closure
- Suture and ligature materials
- Scars and contracture
- Wound dehiscence
- Dressings

Fluid Balance:

- Assessment and maintenance of fluid and electrolyte balance.
- Techniques of venous access.
- Nutritional support: indications, techniques, total parenteral nutrition.

Blood

- Disorders of coagulation and haemostasis.
- Blood transfusion - indications, hazards, complications, plasma substitutes.
- Haemolytic disorders of surgical importance.
- Haemorrhagic disorders; disorders of coagulation.

Post-operative Complications

- Post-operative complications - prevention, monitoring, recognition, management.
- Ventilatory support: indications.

Post-operative Sequelae

- Pain control.
- Immune response to trauma, infections and tissue transplantation.
- Pathophysiology of the body’s response to trauma.

- Surgery in the immuno-compromised patient.

4.1.3 Small Bowel and Colorectal Disorders:

- Neoplasms of large bowel.
- Inflammatory bowel disease (including medical management).
- Diverticular disease.
- Irritable bowel syndrome.
- Haemorrhoids.
- Anal fissure.
- Rectal prolapse.
- Acute appendicitis/RIF pain.
- Intestinal obstruction.
- Intestinal pseudo-obstruction.
- Intestinal ischaemia.
- Peritonitis.
- Large bowel and rectal injuries.
- Anal tumours
- Pelvic autonomic nerves.
- Screening for colorectal cancer.
- Genetics of colorectal cancer.
- Place of radiotherapy and chemotherapy in treatment.
- Anorectal physiology.
- Anorectal ultrasound.
- Faecal incontinence.
- Chronic constipation.
- Intestinal fistulae.
- Colonic bleeding.
- Radiation enterocolitis.
- Other small bowel conditions.
- Colonic obstruction.
- Colonic perforation.
- The use of staples and staplers.

4.1.4 Hepatopancreatobiliary Surgery

- Gallstones and complications.
- Biliary stricture.
- Obstructive Jaundice.
- Neoplasms of the Liver, Biliary Tract and Pancreas.
- Pancreatitis: acute and chronic, complications.
- Liver injuries.
- Portal Hypertension.
- Hydatid disease.
- ESRD and Liver transplantation.

4.1.5 TRAUMA

Initial Assessment and Resuscitation after Trauma:

- Clinical assessment of the injured patient.
- Maintenance of airway and ventilation.
- Haemorrhage and shock.

Chest, Abdomen and Pelvis

- Cardiorespiratory physiology as applied to trauma.
- Penetrating chest injuries and pneumothorax.
- Rib fractures and flail chest.
- Abdominal and pelvic injuries.

Central Nervous System Trauma

- Central nervous system: anatomy and physiology relevant to clinical examination of the central nervous system; understanding its functional disorders particularly those caused by cranial or spinal trauma; interpretation of special investigations.
- Intracranial haemorrhage.
- Head injuries, general principles of management.
- Surgical aspects of meningitis.
- Spinal cord injury and compression.
- Paraplegia and quadriplegia - principles of management.

Special Problems

- Pre-hospital care.
- Triage.
- Trauma scoring systems.
- Traumatic wounds: principles of management.
- Gunshot and blast wounds.
- Skin loss: grafts and flaps.
- Burns.
- Facial and orbital injuries.

Principles of Limb Injury

- Peripheral nervous system: anatomy and physiology.
- Fractures: pathophysiology of fracture healing.
- Non-union, delayed union, complications.
- Principles of bone grafting.
- Traumatic edema, compartment and crush syndromes, fat embolism.
- Brachial plexus injury.

Orthopedics

- Principles of Orthopedic trauma.
- Casts and braces.
- Nerve injuries.
- Hand Infections.
- Principles of Traction.
- Amputations.
- Principles of Rehabilitation.
- Congenital Lesions.
- Bone and Joint Infections.

4.1.6 VASCULAR SURGERY/ANGIOACCESS

The surgical anatomy and applied physiology of blood vessels relevant to clinical examination, the interpretation of special investigations and the understanding of the role of surgery in the management of cardiovascular disease.

Arterial Diseases

- Chronic obliterative arterial disease.
- Amputations.
- Aneurysm.
- Carotid disease.
- Special techniques used in the investigation of vascular disease.
- Limb ischemia: acute and chronic; clinical features; gangrene; amputations for vascular disease.
- Principles of reconstructive arterial surgery.
- Atherosclerosis.
- Principles of Angioplasty/stenting.
- Thrombolysis.
- Reno-vascular disease.
- Raynaud's/vasospastic disorders.
- Lymphoedema.
- Cerebrovascular disease.
- Vasculitis.
- Mesenteric ischemia.
- Graft prosthetics.
- Graft surveillance.
- Autonomic dysfunction.
- Reperfusion injury.
- Ischemic limb arterial trauma.
- Hyper/hypo coagulable state
- Arteriography.
- Continuous wave Doppler.
- Duplex ultrasound.

Venous Diseases

- Vascular trauma and peripheral veins.
- Varicose veins.
- Venous hypertension, post-phlebitic leg, venous ulceration.
- Disorders of the veins in the lower limb.
- Deep venous thrombosis and its complications.

- Chronic ulceration of the leg.
- Thrombosis and embolism.

Lymphatics and Spleen

- Thromboembolic disease.
- Spleen; role of splenectomy; hypersplenism.
- Lymph nodes; lymphoedema.
- Surgical aspects of auto-immune disease.
- The anatomy and physiology of the haemopoietic and lymphoreticular systems.
- Surgical aspects of disordered haemopoiesis.

4.1.7 URORADIOLOGY

Trainees should provide patient care through safe, efficient, appropriately utilized and quality-controlled diagnostic and/or interventional radiological techniques.

Objectives:

1. Review the anatomy of the male and female genitourinary systems.
2. Identify the GU structures on the imaging modalities such as ultrasound, plain film radiography, intravenous urography (IVU), voiding cystourethrography (VCUG), retrograde ureterography (RUG), computed tomography (CT), and magnetic resonance imaging (MRI), including dedicated CT urography and MR urography examinations.
3. Apply conventional imaging protocols of the urinary tract e.g. IVU, RUG, VCUG, retrograde urethrography (RUG).
4. For IVU the trainee should be able to:
   a. Identify indications and contraindications for using abdominal compression.
   b. Order routine views and additional films required to achieve the tailored urogram.
   c. Interpret, identify and/or manage the following with imaging:
      plain abdominal films for bowel gas pattern and recognition of masses and calcifications.
5. Identify basic cross sectional urinary tract anatomy on CT/CT Urography and MRI/MR Urography.
6. Increase awareness of the CT manifestations of genitourinary tract disease:
   a. Have knowledge of different types of renal neoplasms (including subtypes of renal cancer) and their CT appearances.
   b. Understand the technique of CT urography and be able to recognize the CT urographic appearances of a variety of malignant and benign urinary tract abnormalities.

Scans & Procedures

- Hands on training for renal, bladder, prostate scrotal ultrasounds.
- All Urology CT scans including CT kidneys, CT low dose KUB, CT urogram and staging scans of the chest, abdomen and pelvis.
- Urological MRI scans, with MRI of the prostate.
- A full range of diagnostic urological ultrasound.
- Transrectal ultrasound.
- Prostate biopsies: Transrectal, Transperineal.
- CT guided biopsy of kidney tumours.
- Interventional radiology of the urinary tract: in particular nephrostomy and suprapubic catheter insertion, drain placement and varicocele embolization and percutaneous access for nephrolithotomy (PCNL).
- Fluoroscopy and plain radiography. Contrast studies of the urinary tract including urethrogram, cystogram.
- Uses and dangers and complications of ionizing radiation including radiation protection of patients and users.

Patient Safety

Patient safety is a core principle of radiological practice and must be upheld by trainees and care providers. The scope of such practice spans from patient referral to reporting back to primary referee such that the problem is understood and the appropriate clinical decision is taken.

Hazards of Radiation

Trainees must be aware of the different direct and indirect radiation hazards. The use of proper protective equipment should be practiced. The guideline of PNRA (Pakistani nuclear regulatory authority) must be followed

4.1.8 INTENSIVE CARE

O**bjectives:**

- Identify the critically ill patient in medical and surgical intensive care.
- Treat different types of shock, especially septic shock.
- Monitor and treat respiratory failure under supervision.
- Monitor and treat cardiac failure under supervision.
- Monitor and treat Kidney failure under supervision.

- Identify, monitor and treat Liver failure under supervision.
- Perform ultrasound in critically ill patient.
- Pass central line under ultrasound guidance.
- Practice infection control measures necessary in the ICU.
- Apply VAP, CLABSI, CAUTI bundle in the ICU.
- Communicate in SBAR in the ICU.
- Discuss ethical considerations related to intensive care unit.

4.1.9 NEPHROLOGY/DIALYSIS

- Kidney function including glomerular and tubular physiology.
- Obstructive nephropathy; pathophysiology, investigation and treatment.
- Acute renal failure with reference to hypovolemic shock, septicemic shock and obstructive nephropathy
- Chronic renal failure; surgical perspective.
- Hypertension and renal disease.
- Analgesic nephropathy.
- Glomerular and tubular disease of the kidney; manifestations and investigations.
- Peritoneal dialysis, hemodialysis and hemofiltration in the management of acute and chronic renal failure.
- Diabetic nephropathy; management.

4.1.10 SKILLS

Objectives:

- Provide comprehensive and structured training in general surgery and build a strong foundation for training in Urology.
- Take a history, conduct physical examination, perform or request relevant investigations.
- Interpret investigation results to arrive at a working diagnosis.
- Communicate with patients: discuss operative plan, possible management options, postoperative complications etc, and to take informed consent.
- Evaluate and manage trauma and acute surgical emergencies.
- Manage critically ill patients.
- Undertake wound management.

Basic Ward Procedures

- Insert intravenous cannula, nasogastric tube and urinary catheters.
- Remove tubes and drains.
- Perform abdominal paracentesis, pleural tap.
- Perform venous cutdown.
- Do wound dressings.

ICU Procedures

- Insert CVP lines, arterial lines.
- Do endotracheal intubation.
- Carry out intercostal drainage.
- Perform a tracheostomy.
- Know fundamental principles underlying ventilatory support and monitors.
- Prescribe total parenteral nutrition (TPN).

Minor Surgical Procedures

- Perform minor surgical procedures: Hydrocele surgery, lymph node biopsy, excision of superficial swellings and in-growing toe nail, circumcision, banding of haemorrhoids, vasectomy.

Emergency Room Procedures: perform

- Diagnostic peritoneal lavage (DPL).
- Suture lacerations.
- Drain abscesses.
- Wound Debridement.
- Reduction and plaster application of simple fractures and dislocations.
- Anal dilatation and sphincterotomy.
- Preoperative workup and postoperative care.

4.1.11 BIOSTATISTICS AND RESEARCH METHODOLOGY

- Introduction to Bio-Statistics
- Introduction to Bio-Medical Research
- Important of research.
- Identify research needs:
    - Select a field for research.

- Drivers for Health Research.
- Participation in National and International Research.
- Participation in Pharmaceutical Company Research.
- Where do research ideas come from?
- Criteria for a good research topic

- Ethics in Health Research.
- Writing a scientific paper.
- Making a scientific presentation.
- Literature review.

4.1.12 INTERPERSONAL AND COMMUNICATION SKILLS

Objectives:

Demonstrate the ability to effectively exchange information with patients, their families, and professional associates. The trainees should be able to:

- Create and sustain a therapeutic relationship with patients, families and caregivers.
- Acquire counseling skills in order to interact with patients and families, practice conflict resolution and in breaking bad news.
- Work effectively as a member or leader of a health care team.

4.1.13 PROFESSIONALISM AND ETHICS

Objectives:

The trainees should be able to

- Treat all patient populations with compassion, dignity, sensitivity and respect, understanding and recognizing the effects of age, gender, culture, race, religion, and disability on a patient's health and well-being. They should practice basic principles of biomedical ethics, consent and confidentiality in patient care.
- All business and health care practices should be handled ethically, and any potential ethical dilemmas recognized and addressed.
- Complete medical records thoroughly, honestly, and punctually.
- Demonstrate professional conduct, accountability and honesty in health care practice.
- Practice lifelong-learning in the practice of medicine throughout their career, with a view to professional growth and development.

4.2 Phase II: General Urology

4.2.1 BASICS OF UROLOGY

History & Clinical Examination:

- Format of history taking.
- Common urological symptoms.
- Clinical examination in urology.

Investigations 1

- Urine detailed report.
- Urine cytology.
- Hematological investigations in urology (CBC, RFT, Electrolytes, Coagulation profile, PSA etc).
- Ultrasound Scan.
- X-rays.

Investigations 2

- Computerized tomography scan.
- Magnetic resonance imaging.
- Intravenous pyelography.

Investigations 3

- Cystogram.
- Urethrogram.
- Antegrade / Retrograde pyelogram.
- Transrectal ultrasound.

Investigations 4

- DMSA scan.
- MAG scan.
- Bone scan.
- PET scan.

4.2.2 UROLITHIASIS

Epidemiology and Etiology of Urolithiasis

- Incidence and Prevalence of stones
- Risk factors for stones
- Patient factors
- Stone factors
- Theories of stone formation

Metabolic evaluation and Pharmacological treatment of Urolithiasis

- 24-hour urinary studies
- Stone promoters/inhibitors
- Hypercalciuria
- Hyperoxaluria
- Hyperuricosuria
- Hypocitriuria

Basics of Endourology

- Indications
- Guide / Glide wires
- Dilators
- Catheters
- Baskets
- Fragmenting devices

Management of Stones 1

- Extracorporeal shock wave lithotripsy

Management of stones 2

- Renal stones
  - PCNL
  - RIRS
  - ECRIS

Management of stones 3

- Ureteric and Bladder Stones
  - Ureterorenoscopy (rigid & flexible)
  - Cystolitholapaxy

Management of stones 4

- Open Pyelolithotomy / Nephrolithotomy
- Open Ureterolithotomy
- Open Cystolithotomy
- Medical management and prevention of stones

4.2.3 INFECTIONS IN UROLOGY

Microbiology of Genitourinary tract

- Barriers of GU tract
- Common Uropathogens
- Colonization of GU tract

Diagnosis of Urinary tract Infections

- Classification
- Symptomatology
- Diagnostic workup

Treatment of Urinary tract Infections

- Commonly used antibiotics
- Source control
- Management of Sepsis
- Prophylaxis

Specific Infections of the GU tract

- Emphysematous Pyelonephritis
- Xanthogranulomatous Pyelonephritis
- Chronic Pyelonephritis
- Fournier Gangrene

Lower urinary tract infections

- Cystitis
- Prostatitis
- Urethritis
- Bladder Pain syndrome
- Chronic Pelvic Pain syndrome

Sexually transmitted disease

- Neisseria Gonorrhea
- Chlamydia
- Syphilis
- Lymphogranuloma venereum
- Herpes Virus
- HPV
- HIV

Genitourinary tuberculosis

- Etiology
- Epidemiology
- Renal tuberculosis
- Ureteric tuberculosis
- Bladder tuberculosis
- Management of GUTB

4.2.4 FUNCTIONAL UROLOGY/FEMALE UROLOGY

Evaluation of Lower urinary tract symptoms

- History and Clinical examination
- Bladder diary
- Uroflowmetry
- Pre & post void volume

Urodynamic Studies

- Indications

- Setup
- Cystometry
- Pressure flow studies
- Video urodynamics
- Ambulatory urodynamics

Incontinence 1

- Stress incontinence
- Urge incontinence
- Mixed incontinence

Incontinence 2

- Vesico-vaginal fistula
- Uretero-vaginal fistula

Neurogenic Bladder

- History and Clinical examination
- Etiology
- Diagnosis
- Conservative treatment
    - Bowel management
    - Physiotherapy
    - Continence devices (Pads etc)
    - Bladder drainage
    - CISC
    - Medical management

Neurogenic Bladder

- Invasive management
    - Botox
    - Detrusor myomectomy
    - Augmentation cystoplasty
    - Sacral neuromodulation

4.2.5 GENITOURINARY TRAUMA

Evaluation of Trauma

- Types of Trauma
- ATLS protocol
- Signs of Urological Injury

Renal Trauma

- Mechanism of injury
- Types of trauma
- Evaluation
- Management

Ureteral Trauma

- Mechanism of injury
- Types of trauma
- Evaluation
- Management

Bladder Trauma

- Mechanism of injury
- Types of trauma
- Evaluation
- Management

Urethral trauma

- Mechanism of injury
- Types of trauma
- Evaluation
- Management

Genital injuries

- Penile trauma
- Testicular trauma

4.2.6 ANDROLOGY

Classification and Evaluation of male-related infertility

- History
- Clinical examination
- Investigations
- Testicular biopsy
- Vasography

Treatment of male-related infertility

- TURED
- Vasectomy and Vaso-vasostomy
- Assisted reproductive techniques
- Adoption

Varicocele

- Epidemiology
- Aetiology
- History and Clinical examination
- Effects on fertility
- Treatment
- Complications of treatment

Evaluation of erectile dysfunction

- Epidemiology
- History and Clinical examination
- Aetiology
- Investigations

Treatment of erectile dysfunction

- Medical treatment with drugs
- Intracavernosal injections
- Vacuum pump

- Penile implant

Priapism

- Classification
- Symptomatology
- Management

4.2.7 RENAL CANCER

Renal mass: Clinical presentation and evaluation

- Epidemiology and Risk factors
- Clinical presentation
- Investigations
- Paraneoplastic syndromes
- Staging workup
- Renal Mass biopsy

Benign renal masses

- Diagnosis of Benign renal mass
- Angiomyolipoma
- Oncocytoma

RCC: Localized disease 1

- Active surveillance
- Partial nephrectomy
- Radical nephrectomy

RCC: Localized disease 2

- Cryoablation
- Radiofrequency ablation
- HIFU

RCC: Locally advanced and metastatic disease

- Adrenalectomy

- Lymph node excision
- Thrombectomy
- En Bloc reModule

RCC: Metastatic disease

- Risk stratification
- Oligo-metastatic disease
- Targeted therapies
- Cytoreductive nephrectomy
- Angioembolization

4.2.8 BLADDER CANCER

Epidemiology, clinical presentation and evaluation

- Risk factors
- Clinical presentation
- Urine cytology
- TURBT

TURBT: Diagnosis, staging and treatment

- Indications
- Setup
- Technique
- Complications

Non-muscle invasive bladder cancer

- Predicting recurrence and progression
- Intravesical therapy
- Surveillance

Muscle invasive bladder cancer

- Staging
- Radical cystectomy
- Bladder sparing strategies

Urinary diversion 1

- Temporary diversion (PCN / DJ)
- Using bowel for urine storage
- Ileal conduit
- Uretero-sigmoidostomy
- Neobladder

Urinary diversion 2

- Management of urinary diversion
- Follow up
- Complications

4.2.9 PROSTATE CANCER

Epidemiology, clinical presentation and staging

- Epidemiology
- Risk factors
- Screening; Yes, or No
- Clinical presentation
- Diagnosis
- Staging

Diagnosis of prostate cancer

- Prostate Specific Antigen
- Prostate biopsy
- Gleason scoring

Imaging for prostate gland

- Trans-rectal ultrasound
- Multi-parametric MRI
- PIRADS scoring
- PET scan

Localized prostate cancer 1

- Radical prostatectomy

Localized prostate cancer 2

- Active surveillance
- Radiotherapy

Locally advanced and metastatic prostate cancer

- Hormonal therapy / Castration

Biochemical recurrence

- Diagnosis
- Imaging
- Treatment

Castration resistant prostate cancer

- Mechanisms
- Diagnosis
- Imaging
- Treatment

4.2.10 TESTICULAR CANCER

Epidemiology, clinical presentation and staging

- Epidemiology
- Risk factors
- Clinical Presentation
- Diagnosis and Staging

Treatment of testicular cancer (Seminoma)

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Residual masses
- Recurrence

Treatment of testicular cancer (Non-Seminoma)

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Residual masses
- Recurrence

Retroperitoneal lymph node dissection

- Indications
- Types
- Technique
- Complications

4.2.11 NON-NEUROGENIC LOWER URINARY TRACT SYMPTOMS

Epidemiology, clinical presentation and evaluation

- Epidemiology
- Symptomatology
- IPSS
- UFM / Post void volume

Medical management of BPH related LUTS

- Conservative measures
- Alpha blockers
- 5 alpha reductase inhibitors
- PDE-5 inhibitors
- Anticholinergics
- B3-agonist

Surgical management of BPH related LUTS: Minimally invasive surgery

- Types of MIS
- TURP (setup, technique, complications)

Surgical management of BPH related LUTS: Invasive surgery

- Approach: Robotic / Laparoscopic / Open
- Indications
- Technique
- Complications

Urethral stricture

- Epidemiology
- Etiology
- Evaluation

Treatment of urethral stricture

- Urethral dilatation
- Direct vision internal urethrotomy
- Non-transecting urethroplasty

Treatment of urethral stricture

- Flaps and graft for urethral reconstruction
- Anastomotic urethroplasty
- Substitution urethroplasty
- Augmentation urethroplasty

4.2.12 RENAL TRANSPLANTATION

Pre-Transplant assessment

- History & clinical examination
- Investigations
- Cross matching
- Imaging
- Mis-match transplant

Donor surgery and bench dissection

- Indications
- Approach

- Surgical steps
- Concept of Ischemia time
- Bench dissection

Recipient surgery

- Indications
- Approach
- Considerations for vessels
- Surgical steps

Early post-transplant management and complications

- Immunotherapy
- Ultrasound doppler
- Urine leak
- Bleeding / hematoma
- Arterial thrombosis
- Venous thrombosis
- Lymphocele

Transplant rejection and long term management

- Transplant rejection
- Diagnosis (histopathology)
- Treatment of rejection
- Chronic graft dysfunction

4.2.13 MISCELLANEOUS

Upper tract obstruction

- Physiology
- Causes
- Temporary diversion

Peyronie's disease

- Etiology

- Evaluation
- Treatment

Bladder pain syndrome

- Etiology
- Evaluation
- Treatment

Chronic pelvic pain syndrome

- Etiology
- Evaluation
- Treatment

Testicular torsion

- Etiology
- Evaluation
- Treatment

4.2.14 PEDIATRIC UROLOGY

Fundamentals of surgery on children

- Pre-operative considerations in a child
- Per-operative considerations in a child
- Post-operative considerations in a child

Urinary tract infections in children

- Pathophysiology of infections in children
- Assessment of child with UTI
- Treatment of UTI in children

Vesicoureteral reflux

- Pathophysiology of reflux
- Investigations
- Treatment

Posterior urethral valve

- Pathophysiology
- Pre and Post-natal diagnosis
- Temporary management
- Definitive management

Congenital anomalies of urinary tract (1)

- Duplication anomalies
- Hypospadias

Congenital anomalies of urinary tract (2)

- Epispadias
- Extrophy bladder

Disorders of sexual development

- Pathophysiology
- Assessment
- Goals of treatment

Pediatric oncology

- Epidemiology of Wilms tumour
- Staging
- Treatment

Pediatric oncology

- Neuroblastoma
- Testicular tumours

5. COMPETENCIES

The MS urology trainee must have:

- Clinical diagnostic skills for recognition of urological diseases.
- Complete knowledge of application of biochemical, microbiological and pathological tests for the diagnosis and management of urological diseases.

The clinical skills which a trainee has varies according to increasing competency. A competency chart (Annexure 1) based on comprehensive urological training starts from year 3 onwards.

The level of involvement and engagement, and supervision of the trainee is at four levels of supervision:

- Level 1: observer.
- Level 2: assistant.
- Level 3: under direct supervision.
- Level 4: independent.

The volume of respective cases to be completed by the end of each year is also given.

All trainees are required to log in during the weekend for a weekly quiz based on the core urology lecture delivered in that week. There is a formative and summative test (comprising of MCQs and TOACs/OSCE) at the completion of each module. Acquisition of basic surgical skills in the simulation lab is mandatory before real human interaction. The trainees' use an online, digital log (SIUT e-log) daily for self-audit. This data is a record of the competence of an individual student during the training period and at the completion of five years course. The students have to follow the competency chart, which takes into account the status of the student (level of involvement) and the volume of cases, expected to be done at each stage of the training. The conventional logbook is complemented by a competency chart spreadsheet which takes into account all aspects of student's involvement, performance and competency. It is a complete individual log of the training program.

6. LOGBOOK

- A system of electronic logging of cases is devised and implemented in the SIMS-SIUT. It complements and strengthens the conventional log book.
- The trainee shall maintain a log book of operations during the training period, certified by the Supervisor / Head of the Department / Senior consultant.
- The trainee shall maintain the record of all academic activities in the log book.
- The log book shall be made available to the board of examiners for their perusal at the time of final examination.

7. ASSESSMENT

7.1 MS Examination Format

The evaluation process of MS Urology Program is divided into Part I and Part II.

7.1.1 Part I MS Examination

Part I evaluation is done immediately after completion of first two years of rotation. The course curriculum covered will be evaluated in two stages;

Stage I	Theory papers	
Paper I	100 MCQs (Colorectal, Hepatobiliary, Trauma/Orthopedic)	100 Marks
Paper II	100 MCQs (Vascular/Angioaccess, Uroradiology, Intensive care, Nephrology/Dialysis)	100 Marks
Stage II	TOACS/OSCE	100 Marks

Submission and Approval of Thesis is mandatory before the Part II examination. This is followed by the summative assessment as under.

7.1.2 II MS Examination date will be March/April every year.

Part II evaluation will be in four stages**:**

Stage I	Theory papers: Paper I and Paper II	
Paper I	100 MCQs (duration 2 hrs)	100 Marks
Paper II	10 SEQs (duration 3 hrs)	100 Marks
Stage II	**TOACS/OSCE**	120 Marks

The trainee will appear for TOACS as part of clinical assessment. There will be 12 stations related to the subject of Urology. The trainee must score at least 60% marks in each station. There will be 1 station (out of 12) which will examine the e-log of the last 5 years of training.

Stage III Clinical Examination

The trainee will appear for the following;

Long Case	1 (duration 60 minutes)
Short Cases	4 (duration 10 minutes each)

Stage IV Thesis

The trainee will present the summary of the Thesis before the Board of Examiners

7.2 Submission / Evaluation of Synopsis

1. The candidates shall prepare their synopsis as given in the guidelines.
2. The research topic and methodology must meet institutional needs, departmental priorities and research design.
3. Synopsis of the research project should be submitted by the end of 2rd year of the MS/MD program, and after review by the Institutional Review Committee should be submitted for approval of the Board of Studies

7.3 Thesis Examination

- Only those candidates shall be eligible for thesis evaluation who have passed Stage I, II and III (clinical) Examinations.
- The Stage IV of final exam comprises of Presentation of Thesis before the Board of Examiners.
- The Provost shall appoint the external examiners in the relevant specialty for thesis evaluation, preferably from other universities and from abroad, out of the panel of examiners approved by the Advanced Studies & Research Board/ Board of Studies.
- The thesis shall be sent to the external examiners for evaluation six (6) months before the date of the final examination.
- After the approval of thesis by the assessors, the presentation of thesis shall be held within the institution on the date notified by the Controller of Examinations. The Controller of Examinations shall make appropriate arrangements for the conduct of thesis defense examination in consultation with the supervisor.
- The thesis presentation shall be conducted by two External Examiners who shall submit a report on the suitability of the candidate for the award of degree. The supervisor shall act as coordinator.

7.4 Award of MS Urology Degree

After successful completion of the structured courses of MS Urology and qualifying Stage-I, Stage II and Stage-III examinations, the degree with title MS Urology shall be awarded.

8. RECOMMENDED BOOKS

1. Smith's General Urology
2. Operative Urology By Frank Hinman
3. Short Practice of Surgery. Baily and Love
4. Handbook of Renal Transplantation
5. Campbell's Urology-3 volumes edited by Walsh et al

6. Scientific Basis of Urology by Mundy
7. Textbook of Urology by Whitfield and Hendry
8. Urodynamics Principle and Practice by Mundy
9. Kidney Transplantation by Peter Morris
10. Female Urology by Blandy
11. Glenn's Urologic Surgery
12. Pediatric Urology. By Barry O'Donnell and Stephen A Koff
13. Operative Pediatric Urology. Edited by J. David Frank, John P. Gearhart and Howard M. Snyder III

Annexure 1

Course Framework

In the five-year MS Urology program, the initial two years (Phase I) are in General Surgery, Intensive Care, Radiology and Nephrology, and the following three years (Phase II) are in Urology. Once the trainee is in Urology, the academic cycle spans 18 months, ie in the following three years, there are two academic cycles without a break. Moreover, the training pathway also includes skill acquisition in Simulation Lab (Dry Lab and Wet Lab).

Phase I: **Duration: Two years**

Section	Title	Lectures
1	Principles of General Surgery	8
2	Small Bowel and Colorectal Disorders	8
3	Hepato-pancreatico-biliary Surgery	8
4	Trauma/Orthopedics	12
5	Vascular Surgery/Angioaccess	12
6	Uro-radiology	4
7	Intensive care	4
8	Nephrology/Dialysis	4
9	Biostatistics and Research Methodology	8
10	Behavioral Sciences	6

Phase II: **Duration: Three years**

Section	Title	Lectures
1	Basics of Urology	5
2	Urolithiasis	8
3	Infections in Urology	7
4	Functional Urology	6
5	Urological Trauma	5
6	Andrology	6
7	Renal Cancer	6
8	Bladder Cancer	6
9	Prostate Cancer	8
10	Testicular Cancer	4
11	Non-neurogenic lower urinary tract symptoms	8
12	Renal Transplantation	5
13	Miscellaneous	5

Simulation Lab

Year-wise Distribution of Mandatory Simulated models in Urology Training			
	Model	**Model type**	**Minimum practice time**
Year 3			
1	Knot tying	Dry	300 mins
2	Suturing	Dry	300 mins
3	Bowel anastomosis	Wet	300 mins
4	Urethral catheterization	Dry	300 mins
5	Seldinger technique	Dry	300 mins
6	Cystoscopy	Dry	300 mins
7	Laparoscopy (Endo-trainer)	Dry	600 mins
Total			**2400 mins**

Year-wise Distribution of Mandatory Simulated models in Urology Training			
	Model	**Model type**	**Minimum practice time**
Year 4			
1	Repair of Renal laceration	Wet	300 mins
2	Repair of Bladder laceration	Wet	300 mins
3	Repair of Ureteral injury	Wet	300 mins
4	Arterio-venous fistula	Wet	300 mins
5	Ureterorenoscopy	Dry	300 mins
6	Percutaneous nephrostomy placement	Dry	300 mins
7	Laparoscopy (Lap-Sim)	Dry	600 mins
Total			**2400 mins**

Year-wise Distribution of Mandatory Simulated models in Urology Training			
	Model	**Model type**	**Minimum practice time**
Year 5			
1	Ureteral Reimplant	Wet	300 mins
2	Boari Flap	Wet	300 mins
3	Partial nephrectomy	Wet	300 mins
4	Transurethral resection of Bladder tumour	Dry	500 mins
5	Transurethral resection of Prostate	Dry	500 mins
Total			**1900 mins**

Annexure 1I

Competency Chart

Level 1 = Observer, Level 2 = Assistant, Level 3 = Performed under Supervision, Level 4 = Performed Independently

Procedure Name	**Year 3 Expected volume**		**Year 4 Expected volume**		**Year5 Expected volume**	
	Level	No.	Level	No.	Level	No.
A) Kidney						
A1) Open						
Simple Nephrectomy	2	5	2	#	3	5
Donor Nephrectomy	0	0	0	0	2	5
Radical Nephrectomy	1	5	2	5	3	3
Radical nephrectomy with caval thrombectomy	0	0	0	0	1	1
Partial Nephrectomy	1	2	2	3	2	3
Nephroureterectomy	2	2	2	3	3	1
Pyelolithotomy	2	5	3	5	4	5
Pyeloplasty	2	5	2	5	3	5
Drainage of abscess	2	5	3	5	4	5
per cutaneous Nephrostomy	2	5	3	5	4	5
percutaneous Renal biopsy	1	3	1	3	2	3
Renal transplantation	0	0	0	0	2	5
A2) Laparoscopic *						
Nephrectomy	1	5	2	5	2	5
Nephroureterectomy	1	1	2	1	2	2
Decortication of cyst	1	3	2	3	3	3
Pyeloplasty	1	2	2	2	2	3

A3) Percutaneous /Endoscopic						
PCNL	2	5	2	5	3	5
Ureteroscopy						
Rigid	2	5	3	5	4	5
Flexible	1	5	2	5	2	5
Retrograde pyelography	2	5	3	5	4	10
Insertion of D.J stent	2	5	3	5	4	10
B) URETER						
B1) Open						
Ureterolithotomy	2	5	3	5	4	3
Ureterolysis	0	0	0	0	1	3
Ureterocalicostomy	0	0	0	0	1	2
Ureteric re-implantation	1	3	2	3	2	3
Boari's flap	1	2	2	2	2	2
Uretero-ureterostomy	0	0	0	0	1	2
Ureterostomy	0	0	0	0	1	2
C) BLADDER						
C1) Open						
Vesicolithotomy / cystolithotomy	2	5	3	5	4	5
Suprapubic cystostomy/ supra pubic cathter	3	5	4	#	4	5
Vesical diverticulectomy	1	3	2	3	3	3
Partial cystectomy	1	1	2	1	2	1
Radical cystectomy	1	3	2	3	2	3
Repair fistula , vesico colic, vesioc ureteric , vvf	1	2	2	3	2	3
Augmentation cystoplasty adult*	1	3	2	3	2	3
C2) Endoscopic						
Cystolitholapexy	2	5	4	5	4	5
Cystoscopy (flexible)	2	5	4	5	4	5
Cystoscopy (rigid)	3	5	4	5	4	10
TUR-BT	2	5	2	5	3	5
Removal of DJ stent	2	5	4	10	4	10
Biopsy of Bladder Lesions	2	5	3	5	4	5
D) PROSTATE						
D1) Open						
Transvesical prostatectomy	1	3	2	3	3	3
Simple Retropubic prostatectomy	1	3	2	3	3	3
Radical Retropubic prostatectomy *	1	2	2	2	2	3
D2)Endoscopic						
TURP	2	5	3	5	4	5
TUIP	2	5	3	5	4	3
Laser prostatectomy *	1	2	1	3	2	3

E) URETHRA						
Urethral catheterization	4	10	4	10	4	10
Urethral dilatation	2	5	3	5	4	10
E1) Open						
Urethroplasty	1	5	2	5	2	5
Uretherectomy	0	0	1	1	2	1
Insertion of sphincter *	0	0	0	0	1	1
Repair of hypospadias (proximal)	2	3	2	3	2	3
Repair of hypospadias (distal)	2	3	2	3	3	2
Repair of fistulae	1	1	1	1	2	1
Repair of epispadias *	0		0		1	2
E2) Endoscopic						
Optical Urethrotomy	2	5	3	5	4	5
F) PENIS						
Correction of cordae (peyronic's disease)	1	1	1	1	1	1
Correction of priapism	1	2	2	2	3	2
Intracavernosal	2	3	3	3	4	3
Circumcision	3	5	4	5	4	5
Penectomy *	0	0	0	0	1	1
Insertion of Prosthesis *	0	0	0	0	1	1
G) VAGINA						
Neovaginal reconstruction *	0	0	0	0	1	1
Repair of fistulae (VVF) vaginally	1	2	2	2	2	2
H) AMBIGUOUS GENITALIA						
Clitorectomy	0	0	0	0	1	1
Phalloplasty *	0	0	0	0	1	1
I) TESTIS						
1) Open						
Testicular biopsy	1	2	2	2	3	2
Orchidectomy	2	5	3	5	4	5
Radical orchidectomy	2	5	3	5	4	3
2) Laparoscopic						
Orchidopexy	1	2	2	2	2	2
J) SCROTUM						
J1) Open						
Hyderocelectomy	2	5	4	5	4	5
Vasectomy	2	5	4	5	4	5
Excision of epididymal cyst	2	5	4	5	4	5
High ligation of varicoccle (open)	2	5	3	5	4	3
Insertion of Testicular Prosthesis *	0		0		1	1
J2) Laparoscopic						
Varicocele ligation	2	5	2	5	3	5

K) RECONSTRUCTIVE PROCEDURES						
Ureterosigmoidostomy	1	2	2	2	2	2
Ileal conduit	1	5	2	5	3	3
Continent reservoir reconstruction (insert number against procedure)*	1	2	1	3	2	3
Kock pouch						
Ileal neobladder						
Ileocolic neobladder						
Gastrocystoplasty						
Sigmoid neobladder						
L) MISCALLENANEOUS OPEN						
Pelvic lymphadenectomy	1	5	2	5	3	3
Retroperitoneal lymphadenectomy	1	2	2	2	2	2
Inguinal hernia repair	3	3	4	3	4	3
Pelvic extenteration	0	0	0	0	1	1
Seminal vesiculectomy *	0	0	0	0	1	1
open Adrenalectomy	1	2	1	2	2	2
Vasovasotomy*	0	0	0	0	1	1
Laparoscopic						
Pelvic lymph node dissection*	1	1	1	1	1	1
Adrenalectomy *	0	0	0	0	1	1
TVT/TOT	1	2	2	3	2	3
ICSI/ TESSA*	0	0	0	0	1	2
M) TRAUMA						
Nephrectomy	1	1	2	2	2	2
Repair of urinary tract injuries	1	1	2	2	2	2
N)Paediatric Procedures Open						
Nephrectomy simple	1	5	2	5	3	3
Wilms Nephrectomy	1	2	2	2	2	2
Pyeloplasty	2	5	2	5	3	3
Ureteic reimplant	1	5	2	5	2	5
Ureterostomy	1	5	2	5	3	5
Vesicostomy	1	5	2	5	2	5
closure vesicostomy	1	5	2	5	3	3
Orchidopexy for undescended testis open	2	5	3	5	4	5
Torsion Testis	2	5	4	5	4	5
Hypospadias distal repair	2	5	3	5	4	3
Hypospadias 2 stage repair	1	5	2	5	2	5
Hypospadias fistula repair	2	5	2	5	3	3
Augmentation of bladder*	1	3	2	3	2	5
Mitrofanoff Procedure*	1	3	2	3	2	5
Paediatric Procedures Endoscopic						
Cystoscopy	2	5	3	5	4	5

Ureteroscopy	1	5	2	5	3	5
Fulgration PUV	1	5	2	5	2	5
Injection Deflux/ Macroplastique for VUR *	1	5	2	5	2	5
PCNL in child	2	5	2	5	3	5
Laparoscopic Nephrectomy child*	1	5	2	5	2	5
Laparoscopic Pyeloplasty child*	1	3	2	3	2	3
O) ESWL	1	20	1	20	3	20
P) Urodynamics (insert number against procedure)	1	5	3	5	4	10
Cystometry						
UPP						
Videourodynamics*						
Q)Vascular Access Surgery						
AVF	2	5	3	5	4	5
Vascular Graft	1	2	1	2	2	2
Perm Catheter	1	2	1	2	1	2
Tenchkoff	0	0	0	0	1	1
R) Radiology Candidates are expected to spend time in Radiology Units						
Interpretation = L 1 observe, L2 assist in reporting , L3 report with assistance, L4 independent reporting ; Performance L1-4 same for surgery						
X-rays	3	20	4	20	4	20
Ultrasound	2	10	3	20	4	20
IVU	3	20	4	20	4	20
CT Scan	2	10	3	10	4	20
MRI	2	5	2	5	3	5
PET scan*	1	2	1	2	2	2
TRUS	1	5	2	5	3	5
TRUS biopsy	1	5	2	5	3	5
Renal Angiography	1	2	1	2	1	2
Ultrasound guided drainage Kidney	1	5	2	5	2	5
MCUG	2	5	3	5	4	5
Urethrogram	2	5	3	5	4	5
Isotope scans	1	5	2	5	3	5
Others						
S) Patient Management to be assessed by MiniCex and DOPS						
Elicit a pertinent history MiniCEX		6		6		6
Perform a physical examination MiniCEX		6		6		6
Order appropriate investigations MiniCEX		6		6		6

Interpret results of investigations	MiniCEX		6		6		6
Plan & implement appropriate treatment	MiniCEX		6		6		6
Obtain informed consent	DOPS		6		6		6
Counsel patient	DOPS		6		6		6
Give appropriate instructions to staff and colleagues	DOPS		6		6		6
T) Skills development		Level		Level		Level	
Endotrainer		3	20 hr	3	20 hr	3	20 hr
Simulator training		3	5 hr	3	5 hr	3	20 hr
Hands on workshops		3	5 hr	3	5 hr	3	5 hr
U) Research							
Publications		any author	1	any author	1	any author	1
Presentations at scientific meetings		self presented	1	self presented	1	self presented	2
Attendance at Urology meetings, local/regional/national or international			5		5		5
V) DOPS to assess skills, documented			5		5		5