REGULATIONS AND CURRICULUM GOVERNING

M.Ch. UROLOGY PROGRAM

(Academic year from which the curriculum is implemented/ revised/ amended)

Name of the Constituent Unit/Centre: Yenepoya Medical College



YENEPOYA
Deemed to be University

Deralakatte, Mangalore, Karnataka.

YENEPOYA
Deemed to be University

NOTIFICATION FROM THE UNIVERSITY

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No.YU/REG/ACA/M.Ch. Urology/A. Council-15/2013 13.12.2013

NOTIFICATION

Sub: Starting for M.Ch Urology course

Ref: Minutes of the 15th meeting of Academic Council held on 30.11.2013 (Agenda-10 (2))

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Further to the approval of the Academic Council at its 15th meeting held on 30.11.2013 vide Agenda – 10 (2) , the draft M.Ch. syllabus prepared and submitted as per the M.C.I. norms is hereby adopted.

REGISTRAR

Copy to:

1. Dean, Faculty of Medicine
2. HoD, Urology
3. Academic Section

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M.Ch. UROLOGY

1. PREAMBLE

Specialty of Urology comprises of the diagnosis and treatment of benign and malignant diseases of Genitourinary tract and Adrenal gland and Andrology. The M.Ch. Urology curriculum is a premier surgical training program designed to develop expert specialists capable of managing the full complexity of the genitourinary tract and the adrenal glands. This advanced course of study bridges the gap between intricate surgical intervention and comprehensive medical management, ensuring that trainees gain mastery over both benign and malignant pathologies. Throughout the residency, candidates are immersed in a diverse clinical landscape, ranging from the metabolic management of calculus disease to the high-stakes surgical requirements of Uro-oncology, which involves the treatment of cancers affecting the kidneys, bladder, prostate, and testes.

A central pillar of the curriculum is the focused study of Andrology, which addresses the nuances of male reproductive health, including infertility, sexual dysfunction, and hormonal disorders. This ensures a holistic approach to the male patient that extends beyond simple tract maintenance. Furthermore, the program is defined by its commitment to technological innovation; trainees are expected to achieve high proficiency in endourology, laparoscopy, and robotic-assisted surgery. By integrating these minimally invasive techniques with the foundations of open reconstructive surgery and renal transplantation, the M.Ch. program produces "complete urologists" who are prepared to lead in clinical excellence, academic research, and the advancement of global urological standards.

2. GOALS

The goal of M.Ch. course is to produce a competent physician who:

- Recognizes the health needs of adults and carries out professional obligations in keeping with principles of National Health Policy and professional ethics;
- Has acquired the competencies pertaining to Urology that are required to be practiced in the community and at all levels of health care system;

- Has acquired skills in effectively communicating with the patients, family and the community;
- Is aware of the contemporary advances and developments in medical sciences.
- Acquires a spirit of scientific enquiry and is oriented to principles of research methodology; and
- Has acquired skills in educating medical and paramedical professionals.

3. SUBJECT SPECIFIC LEARNING OBJECTIVES

During the course, the student should acquire the following knowledge and skills

A. Theoretical knowledge and clinical/practical skills:

Should acquire in-depth knowledge and clinical skills to treat/manage benign and malignant diseases of genitourinary tract and Adrenal diseases and Andrology.

B. Teaching skills

Should be able to teach relevant aspects of benign and malignant diseases of Genitourinary tract and Adrenal diseases and Andrology

C. Research:

Should be able to carry out research related to above mentioned subjects.

D. Group approach:

Should participate in multi-disciplinary meetings with Radiologists, Pathologists and Microbiologists, Nephrologists, Radiation and Medical Oncologists, and experts from allied clinical disciplines like Intensivists and Infectious diseases specialists.

E. Attitudes including communication skills

Should be able to communicate effectively with patients, colleagues and the community and should be able to counsel patients and relatives about various decisions during management.

At the end of the M.Ch. (Urology) training, the candidate should:

a. Be able to investigate, diagnose, and manage Urology patients.

b. Be able to interpret data from relevant clinical findings, and imaging and laboratory investigations.

c. Be able to perform and interpret common radiology investigations like Ultrasonography, Plain x-ray studies with and without contrast agents like IVP, Urethrogram in adults and children etc.

d. Be able to describe and discuss the indications/contra-indications of Kidney, Urinary tract, Genital and Adrenal surgical procedures for benign and malignant diseases.

e. Be able to perform common operations on the kidney, urinary tract, genital and adrenal glands for benign and malignant diseases (including Endourological and simple minimal access surgical procedures).

f. Be able to discuss the current literature on relevant aspects of the investigative, clinical, medical, and operative management of Urology diseases.

g. Be aware of advancement of all subspecialties of Urology including, but not limited to, Renal Transplantation, Neuro-urology and Urodynamic studies, Female Urology, Paediatric Urology, Andrology and Uro-oncology

h. Be acquainted with allied and general clinical disciplines.

i. Be capable of imparting Urology training.

j. Be able to identify, plan, communicate and conduct research in Urology.

k. Be able to discuss and defend the ethical issues involved in the relationship between patients and peers in clinical practice and research.

4. SUBJECT SPECIFIC COMPETENCIES

4.1 General competencies to be acquired.

A. Establish a rapport, obtain a complete and relevant history; and perform a thorough physical examination adapted to the patient's clinical situation to arrive at a tentative diagnosis and list of probable differential diagnosis.

Implied sub-competencies:

a. Obtain appropriate data from patient or caregiver.
b. Establish rapport.
c. Demonstrate active listening skills.
d. Perform appropriate physical examination.
e. Demonstrate specific physical examination skills.
f. Integrate all the above

g. Lists diagnostic possibilities, identifying the most likely diagnosis
h. Justifies the principal diagnosis.

B. Plan and order relevant sequential investigations and interpret their results to confirm a working diagnosis and initiate a plan of management. Communicate the same to the patient and relatives.

Implied sub-competencies:

a. Recognizes significant urgent or abnormal results.
b. Distinguishes between normal variation and abnormal results.
c. Formulates an appropriate preliminary opinion based on the results.
d. Communicates significant results to other team members**.**
e. Communicates results in a clear and comprehensible manner to patients and care givers.
f. Proposes evidence informed, holistic initial management plans that include pharmacologic components, non-pharmacologic components including lifestyle, and dietary components and surgical components taking in to account patient's context, patient's consent, and values.
g. Prioritizes the various components of the management plans.
h. Reviews the plan with other members of the team.

C. Present oral and written reports that document a clinical encounter.

Implied sub-competencies:

a. Documents approved management plans in the form (written / electronic), prescriptions and consultations / referrals.
b. Uses the electronic record when available to keep the team informed of progress.
c. Follows principles of error reduction including discussions of indications / contraindications of treatment plans, possible adverse effects proper dosage and drug interactions.
d. Writes consults / referrals, orders or prescriptions which are complete, incorporate patient safety principles which can be understood by all members of the team including the patient.
e. Presents a concise and relevant summary of a patient encounter to members of health care team.

D. Communicate effectively with patients and relatives.

Implied sub-competencies:

a. Specifies patient context in reports.
b. Demonstrates a shared understanding among the patient, the health care team members, and consultants through oral and written reports.
c. Documents findings in a clear, focused, and accurate manner.

d. Realize and execute a proper handing over procedure to the next care giver so that patient care is continuous and uninterrupted.
e. Obtain a proper informed consent for the planned line of management after explaining alternatives to the patients.
f. Be prepared to alter the plan of management based on response from the patient.
g. Prepare patients for surgical and other procedures as well as manage their perioperative /postoperative and rehabilitative periods.
h. Explain to the patients and their families clearly and concisely the diagnoses, treatment plans, and medical instructions.
i. Use simple language, avoid medical jargon, and tailor their communication style to the patient's level of understanding.
j. Use nonverbal cues such as body language, facial expressions, and eye contact to convey empathy, compassion, and professionalism.
k. Demonstrate cultural sensitivity, understanding and respect for patient's cultural beliefs, values, and practices to provide patient-centered care and avoid misunderstanding.
l. Communicate a proper follow up plan.

E. Recognize a patient requiring urgent or emergent care, provide initial management and seek help as required.
Implied sub-competencies:

a. Utilizes early warning scores or rapid response team / medical emergency team criteria to recognize patients at risk of deterioration and mobilizes appropriate resources urgently.
b. Performs basic cardiac life support including CPR in cardiac arrest.
c. Asks for help when uncertain or requiring assistance.
d. Involves team members required for immediate response, continued decision making and necessary follow-up.
e. Initiates and participates in a code response.
f. Rapidly assesses and initiates management steps.
g. Documents patient's assessment and necessary interventions in record
h. Updates family members to explain patent's status and escalation of care plans.
i. Clarifies patient's goals of care upon recognition of deterioration.
j. Recognize a situation where a patient needs referral for appropriate management.

F. Participate in health quality improvement initiatives including auditing one's own practice.

Implied sub-competencies:

a. Participates in morbidity and mortality rounds.
b. Enters information in an error-based system.

c. Engages in daily safety habits like universal precautions, hand washing, time outs etc.
d. Recognizes one's own errors to the supervisor/team, reflects on one's contribution and develops his/her own plan or quality improvement plan.
e. Identifies a risky situation for the safety of a patient.
f. Participates in a quality improvement exercise/project.

G. Collaborate as a member of an inter-professional team. Is actively involved in care coordination.

Implied sub-competencies:

a. Recognizes the value and contributions of all team members.
b. Actively strives to integrate into the team.
c. Recognizes the value and contributions of all team members.
d. Seeks input and help from all team members as needed.
e. Adapts communication strategies to the recipient in content, style and venue contributing to good interactions with team members.
f. Listens actively and elicits ideas and feedback from all team members.
g. Anticipates and responds to emotions in typical situations.
h. Rarely shows lapses in professional conduct except in unanticipated situations that evoke strong emotions and has insight to use experience to learn to anticipate and manage future triggers.
i. Works toward achieving team goals.
j. Usually involves patient's / caregivers and other members of the team in goal setting care plan development.
k. Shares his knowledge of community resources with patient's, family, and other members of team.
l. Is actively involved in care coordination.

H. Displays honesty, compassion, respect and empathy for patient's and relatives.

Implied sub-competencies

a. Recognizes medico-legal issues, patient confidentiality and other regulations pertaining to medical practice.
b. Evaluate published evidence and appropriately apply it to one's clinical practice.
c. Plan a study, collect data, record, and analyse data and discuss one's findings in comparison to available evidence. Make a verbal and written communication.
d. Teach relevant aspects of urological surgery to resident doctors, junior colleagues, nursing, and para-medical staff.
e. Effectively communicate with patients, colleagues, and community about Urological Surgery disorders as well as counsel patients and relatives about various decisions during management.
f. Understand factors for hospital infection and take appropriate universal precautions to prevent hospital infection.

I. Perform general procedures of a physician.

Implied sub-competencies:

a. Demonstrates the necessary skills to perform the procedure and has good understanding of the indications, contraindications, the risks, and the benefits of the procedure.

b. Anticipates and recognizes the complications associated with the procedure and seeks help appropriately.
c. Explains the procedure to the patient/caregiver in a language that is familiar to them and such that they understand the risks associated with the procedure.
d. Answers all the questions of patient/caregivers clearly.
e. Documents the procedure with all relevant details.

4.2 Basic sciences in urology

A. Should be able to describe and discuss following.

a. Surgical anatomy of the Kidney and Ureter, Retroperitoneum, Female Pelvis, Male Pelvis, Male Reproductive system, and the Adrenal gland

b. Physiology and pharmacology of Kidney, the Renal pelvis, Ureter, Bladder and Urethra.

c. Male reproductive physiology including physiology of penile erection, male orgasm, and ejaculation.

d. The physiology of the Adrenal glands

e. The Embryology of the human Genitourinary tract

f. The developmental, molecular biology, and physiology of the Prostate.
g. The principles of Immunology and Immunotherapy in Uro-oncology

g. The principles of Molecular Genetics and Cancer biology as applicable to urological diseases and cancers.

h. The principles of Ultrasonography imaging in urology.

i. Basic principles of plain film conventional X-ray imaging (with or without contrast), Computerized Tomography (CT scan) and Magnetic Resonance Imaging (MRI) (with or without contrast) of the abdomen including Kidneys, Genitourinary tract and Adrenal gland.

j. Basic principles of Nuclear medicine in imaging of the Genitourinary tract and Adrenal disorders

k. Scientific basis of Urology symptoms.

l. Principles of assessment of urologic and surgical outcomes

B Should know following Basic principles of operative urology.

a. Basic principles of urological surgery

b. Perioperative evaluation and care

c. Basic operative principles of urologic surgery

d. Techniques of lower urinary tract catheterization and upper urinary tract drainage

e. Principles of urologic endoscopy

f. Principles of surgery for urological cancers.

g. Fundamentals of laparoscopic and robotic urologic surgery

h. Basic energy modalities in urologic surgery and their appropriate application

i. Principles of optics of endoscopic equipment.

j. Special equipment used in Urology especially the endoscopes and their upkeep and maintenance.

k. Consumables used in Urology such as guidewires, ureteral stents, urethral catheters, sling materials various meshes, prosthesis etc.

l. General complications of urologic surgery

4.3 Clinical urology

Should be able to

a. Apply clinical diagnostic skills for recognition of urological diseases.

b. Appropriately use biochemical, microbiological, and pathological tests in the diagnosis and management of urological diseases.

c. Appropriately apply imaging studies and interpret them for the diagnosis and management of urological diseases.

d. Apply sound clinical judgment to plan cost effective investigation and management of most urologic diseases.

4.4 Diagnostic Studies

Should be able to perform the following diagnostic studies and interpret results.

a. Ultrasound evaluation of the abdomen and pelvis including advanced diagnostic imaging for diseases of the kidneys, ureters, bladder, prostate, and external genitalia as well as Doppler studies, and trans rectal ultrasonography of the prostate and seminal vesicles.

b. Radiological studies such as Intravenous Pyelography (IVP), Retrograde urethrogram, Cystogram, Voiding cystourethrogram, Nephrostogram, Retrograde ureteropyelography etc.

c. Urodynamic studies including Uroflowmetry, Cystometrogram, Electromyography Pressure flow studies, Videourodynamics etc.

d. Intracavernous vasoactive substance injection tests for erectile dysfunction.

4.5 Office urology

Should be able to

a. Medically treat most urologic diseases including infections and inflammatory disorders of the urinary and male genital tract, medical management of urolithiasis, male infertility and sexual dysfunction, urinary incontinence, neurogenic functional disorders of the lower urinary tract, androgen deficiency, benign prostatic hyperplasia etc.

b. Use Extracorporeal shock wave lithotripsy for the treatment of urolithiasis and manage complications arising out of its application.

c. Have the skill to perform common outpatient urological procedures like Urethral catheterization, Suprapubic cystostomy, Urethral dilatation, Prostate biopsy, Flexible cystoscopy, Vasectomy, Intravesicalinstillations etc.

4.6 General management of the urological inpatient in the emergency and elective setting

Should be able to

a. Provide initial management for critically ill urological patients.

b. Provide initial management for urological trauma patients.

c. Assess and perform risk optimization for pre-operative patients in preparation for urological surgery.

d. Manage uncomplicated post-operative urological surgical patients.

e. Manage post-operative urological patients with complications.

f. Manage common urological emergencies in the emergency medicine department and other wards including patients in other disciplines.

g. Manage urological emergencies detected or occurring during surgery in other disciplines like bladder or ureteral injuries etc. during Surgical or Gynaecological procedures.

h. Recognise and refer appropriately cases that are beyond his competence both in the emergency and in the routine setting.

i. Supervise junior learners in the clinical setting.

4.7 Basic principles of operative urology

Should demonstrate knowledge of

a. Basic principles of urological surgery
b. Perioperative evaluation and care
c. Basic operative principles of urologic surgery
d. Techniques of lower urinary tract catheterization and upper urinary tract drainage
e. Principles of urologic endoscopy
f. Principles of surgery for urological cancers.
g. Fundamentals of laparoscopic and robotic urologic surgery
h. Basic energy modalities in urologic surgery and their appropriate application
i. Principles of optics of endoscopic equipment.
j. Special equipment used in Urology especially the endoscopes and their upkeep and maintenance.
k. Specialised Consumables used in Urology such as guidewires, urethral and ureteral catheters etc.
l. General complications of urologic surgery
m. Special considerations in pregnancy while managing urologic disorders

4.8 Infections and inflammation of the urinary tract

Should be able to describe following and manage them.

a. Aetiology, epidemiology, and pathogenesis of urinary tract infections.
b. The evaluation and management of urinary tract infections of the lower and upper urinary tract.
c. The management of urinary tract infections in pregnancy and in children.
d. Aetiology, epidemiology and pathogenesis of Prostatitis and related pain conditions
e. The evaluation and management of Epididymo-orchitis
f. Aetiology, epidemiology, pathogenesis, classification and management of Interstitial cystitis/Bladder pain syndrome and related disorders
g. The evaluation and management of various Sexually transmitted diseases
h. Aetiology, epidemiology, pathogenesis, classification, and management of genitourinary tract Tuberculosis
i. Aetiology, epidemiology, pathogenesis, classification, and management the different Parasitic infections of the Genitourinary tract

4.9 Genitourinary tract trauma

Should be able to describe following and manage them.

a. General principles of assessment and management of a patient with urogenital trauma.

b. Classification, assessment, and management of blunt and penetrating upper urinary tract trauma, including indications, timing, and techniques of the different minimally invasive and open surgical interventions.

c. Assessment and management of iatrogenic ureteral injuries

d. Classification, assessment, and management of posterior and anterior urethral injuries, including indications, timing, and techniques of the different surgical interventions.

e. Classification, assessment, and management of injury to the penis (including fracture of the penis), including indications, timing, and techniques of the different surgical interventions.

f. Classification, assessment, and management of injury to the testis, including indications, timing, and techniques of the different surgical interventions.

g. Assessment and management of scrotal avulsion injuries.

h. Special considerations in the management of paediatric urogenital trauma.

4.10 Reproductive and sexual function

Should be able to describe following and manage them.

a. Holistic approach to men's health and the role of androgen deficiency on men's health.

b. Aetiology, epidemiology, pathogenesis, classification, assessment and management of Male Infertility

c. Indications, techniques, complications, and outcomes of surgical management of Male Infertility.

d. Aetiology, pathophysiology, evaluation, and management of erectile dysfunction e) Indications of different surgeries for erectile dysfunction including penile prosthesis and their perioperative management, technique, and complications.

e. Aetiology, pathogenesis, evaluation, and management of Priapism

f. Aetiology, pathophysiology, evaluation, and management of disorders of male orgasm and ejaculation

g. Etiopathogenesis, evaluation and management of Peyronie's disease

h. Indications, perioperative management, technique, and complications of different techniques of Vasectomy.

i. Epidemiology, pathogenesis, evaluation and management of sexual function and dysfunction in the female.

j. Special urologic considerations in Transgender individuals.

4.11 Male genitalia

Should be able to describe following and manage them.

a. Epidemiology, and aetiology of the neoplasms of the testis

b. Pathology of testicular neoplasia

c. Diagnosis and staging of testicular cancer.

d. Stage wise multidisciplinary management of testicular tumours

e. Open, laparoscopic and robotic-assisted retroperitoneal lymphadenectomy for testicular tumours.

f. Epidemiology, and aetiology of tumours of the penis and urethra. g. Pathology of penile and urethral neoplasms.

g. Diagnosis and staging of penile and urethral neoplasms.

h. Stage wise multidisciplinary management of penile and urethral tumours.

i. Indications, perioperative management, techniques, and complications of inguinal node dissection.

j. Assessment and management of undescended or ectopic testis.

k. Diagnosis and management of testicular torsion.

l. Open drainage of periurethral abscess,

m. Hydrocele surgery

n. Circumcision, dorsal slit, Meatoplasty etc.

4.12 Medical renal diseases, dialysis, and kidney transplantation

Should be able to describe following and manage them

a. Assessment and management of Reno vascular hypertension including operative management.

b. Assessment and management of renal insufficiency and ischemic nephropathy

c. including the principles and techniques of renal replacement therapy.

d. The different techniques of vascular access procedures for dialysis and the indications, and complications of each of the techniques.

e. Assessment and management of cystic renal diseases of the kidney including all aspects of operative management.

f. Assessment and management of a recipient for renal transplantation including indications, perioperative management, operative technique and complications and their management.

g. USG guided Transplant Renal Biopsy

h. Special considerations in paediatric renal transplantations.

i. Assessment and management of a living donor for kidney transplantation including the perioperative management, operating technique, organ preservation and bench surgery and post-operative complications and their management.

j. Assessment and management of a deceased donor including medico legal aspects of brain death certification, and consent for organ donation, interaction with critical team and multidisciplinary organ retrieval team, organ preservation, bench surgery, organ harvesting techniques.

k. Medicolegal aspects of kidney transplantation and organ donation including the acts and rules related to them.

4.13 Upper urinary tract disorders

Should be able to describe following and manage them

a. Aetiology, epidemiology, and natural history of benign and malignant neoplasms of the kidney and upper urinary tract. b. Pathology of renal neoplasms.

b. Evaluation and nonsurgical management of benign upper tract neoplasms.

c. Diagnosis and staging of renal cancer.

d. USG/CT guided –Renal Mass Biopsy

e. Different minimally invasive and endoscopic options for the management of upper tract neoplasms and their merits and demerits.

f. Cryoablation, Radiofrequency Ablation (RFA) of renal mass.

g. Radical nephrectomy: open, laparoscopic, and robot-assisted laparoscopic approaches

h. Nephron sparing surgery: open, laparoscopic, and robot-assisted laparoscopic approaches.

i. Active management strategies for small renal masses including active surveillance, minimally invasive options, and partial nephrectomy (open, laparoscopic, and robotic assisted.

j. Treatment of recurrent and metastatic renal cancer

k. Assessment and management of cystic renal diseases of the kidney including all aspects of operative management.

l. Pathophysiology of upper urinary tract obstruction and management of upper urinary tract obstruction.

m. The different techniques of operative management of pelviureteral junction and vesicoureteral junction obstruction and benign strictures of the ureter.

n. Ultrasound and fluoroscopy guided percutaneous nephrostomy, ultrasound guided aspiration cysts and abscesses in the kidney

4.14 Urolithiasis

Should be able to describe following and manage them.

a. Aetiology, epidemiology, and pathogenesis of Urolithiasis.

b. Strategies for management of urinary tract calculi

c. Endourological and minimally invasive management for upper and lower urinary tract calculi like URSL, RIRS, PCNL, Cystolithotripsy etc.

d. Open surgical management for upper and lower urinary tract calculi.

e. Management of paediatric Urolithiasis

f. Management of Urolithiasis disease during pregnancy

4.15 The Adrenal

Should be able to describe following and manage them

a. Pathophysiology, evaluation, and medical management of various benign and malignant Adrenal disorders

b. Surgical procedures on the Adrenal glands for various benign and malignant diseases including indications, perioperative management, techniques, and complications.

4.16 Lower urinary tract disorders

Should be able to describe following and manage them

a. Pathophysiology and classification of lower urinary tract dysfunction

b. Evaluation and management of women with urinary incontinence and pelvic prolapse.

c. Evaluation and management of men with urinary incontinence

d. Urodynamic and Video-urodynamic evaluation of the lower urinary tract

e. Epidemiology and pathophysiology of urinary incontinence and pelvic prolapse.

f. Various Neurogenic and Non-neurological dysfunctions of the lower urinary tract.

g. Pharmacologic principles of management of lower urinary tract disorders including the pharmacology of the drugs used.

h. Role of conservative management of urinary incontinence including behavioural and pelvic floor therapy, urethral and pelvic devices, and electrical stimulation and neuromodulation in storage and emptying failure.

i. Principles underlying retro pubic suspension surgery for incontinence in women, the various surgical techniques, their indications, complications, and management of complications.

j. Principles underlying vaginal and abdominal reconstructive surgery for pelvic organ prolapse.

k. Evaluation and management of pelvic organ prolapse and female stress urinary incontinence.

l. Anterior compartment prolapse repair

m. Types of urethral slings used for the treatment of urinary incontinence including autologous, biologic, and synthetic, the different surgical techniques available, their indications, operative steps, complications, and management of complications.

n. Evaluation and management of urinary tract fistulae including types of surgery, their indications, operative steps, complications, and management of complications.

o. Clinical presentation assessment and management of bladder and female urethral diverticula including types of surgery, their indications, operative steps, complications, and management of complications.

p. Assessment and management of sphincter incontinence in the male including types of surgery, their indications, operative steps, complications, and management of complications.

4.17 Use of bowel in the urinary tract and urinary diversion

Should be able to describe following and manage them

a. Metabolic complications of use of bowel for reconstruction of the urinary tract and their prevention and management.

b. Different surgical techniques of uretero-enteral anastomosis and their merits and demerits.

c. Indications, perioperative management, and complications of the different techniques of bladder augmentation.

d. Indications, perioperative management, and complications of the different techniques of continent and non-continent urinary diversions.

4.18 Neoplasms of the bladder

Should be able to describe following and manage them.

a. Epidemiology, aetiology of tumours of the bladder.

b. Biomarkers and their role in bladder cancer.

c. Pathology of bladder neoplasms

d. Diagnosis and staging of bladder cancer.

e. Management strategies for non–muscle-invasive bladder cancer (ta, t1, and cis)

f. Management of muscle-invasive and metastatic bladder cancer

g. Surgical management of bladder cancer: transurethral, open, laparoscopic and robotic

4.19 The prostate

Should be able to describe following and manage them.

a. Aetiology, pathophysiology, epidemiology, and natural history of benign prostatic hyperplasia.

b. Evaluation and nonsurgical management of benign prostatic hyperplasia

c. Different minimally invasive and endoscopic options for the management of benign prostatic hyperplasia like TURP, HOLEP etc.

d. Minimally invasive surgical techniques like Urolift, Rezum, Aquablation and Prostate Artery Embolization (PAE) etc

e. Simple prostatectomy including open and robot-assisted laparoscopic approaches.

f. Epidemiology, aetiology, and prevention of prostate cancer

g. Prostate cancer biomarkers and their role in prostate cancer.

h. Techniques of prostate biopsy

i. Pathology of prostatic neoplasia

j. Diagnosis and staging of prostate cancer.

k. Active management strategies for localized prostate cancer including active surveillance of prostate cancer, radical prostatectomy (open, laparoscopic, and robotic assisted), radiation therapy, focal therapy for prostate cancer.

l. Treatment of locally advanced and metastatic prostate cancer

m. Management strategies for biochemical recurrence of prostate cancer

n. Treatment of castration-resistant prostate cancer

4.20 Paediatric urology – general principles

Should be able to describe following and manage

a. Urologic aspects of paediatric nephrology
b. Perinatal urological considerations including fetal interventions
c. Pathophysiology of urinary tract obstruction in children.
d. Application of imaging techniques for diagnosis of paediatric urogenital disorders.
e. Core principles of perioperative management in children
f. Principles of laparoscopic and robotic surgery in children
g. Perform urologic evaluation of the child.
h. Order the correct urodynamic evaluation of a child with lower urinary tract dysfunction in children.
i. Treat infection and inflammation of the paediatric genitourinary tract

4.21 Paediatric urology – Upper tract conditions

Should be able to describe following and manage

a. Embryological basis of the anomalies of the kidneys including renal dysgenesis, disorders of ascent, fusion anomalies, and cystic disease of the kidney and their assessment and medical and operative management.

b. Embryological basis of anomalies of the ureter including ectopic ureter, ureterocoele, and ureteral anomalies and their assessment and medical and operative management.

c. Pathophysiology of vesicoureteral reflux and the evaluation and the medical and operative management of a child with vesicoureteral reflux.

d. Indications, techniques, results, and complications and the management of complications of the different surgical procedures of the ureter in children performed for retrocaval ureter, pelviureteric junction obstruction, megaureter, and vesicoureteral reflux.

4.22 Paediatric urology - Lower urinary tract conditions

Should be able to describe following and manage

a. Embryological basis of bladder anomalies in children such urachal cyst, sinus, and fistula and exstrophy-epispadias complex and the assessment and management of these anomalies including surgical management.

b. Embryological basis and pathophysiology of Prune-belly syndrome and the assessment and management including operative management of the condition.

c. Embryological basis and pathophysiology of posterior urethral valve and the assessment and management including operative management of the condition.

d. Pathophysiology, evaluation, and management of neurovesical dysfunction of the lower urinary tract in children.

e. Pathophysiology, evaluation, and management of functional disorders of the lower urinary tract in children.

f. Indications, perioperative management, techniques, and complications of various reconstructive surgical procedures of the lower urinary tract in children

4.23 Paediatric urology - Male genitalia in children

Should be able to describe following and manage

a. Embryological basis, evaluation, and management of congenital abnormalities of the external genitalia in boys including hypospadias and epispadias.

b. Embryological basis, evaluation, and management of undescended and ectopic testis.

c. Indications, perioperative management, techniques, and complications of various reconstructive surgical procedures for hypospadias.

d. Embryological basis, evaluation, and management of abnormalities of the genitalia in girls

e. Aetiology, evaluation, and medical management of disorders of sexual development including the different operative procedures used, their indications, technique, complications, and management of complications.

4.24 Paediatric Uro-oncology

Should be able to describe following and manage

a. Epidemiology, aetiology, pathology, and natural history of different paediatric urogenital tumours.

b. Diagnosis and staging of the different paediatric urogenital tumours.

c. The assessment and stage wise management of the different paediatric urogenital tumours.

d. The prognosis of the different paediatric urogenital conditions

4.25 Urological endoscopic and image guided procedures

Should be able to perform common urological endoscopic procedures like

a. Diagnostic cystoscopy and bladder biopsy

b. Ureteral catheterization,

c. Endoscopic urethrotomy,

d. Ureteral stenting and stent removal,

e. Foreign body removal from bladder,

f. Cystolithotripsy,

g. Bladder neck incision,

h. Transurethral incision of prostate,

i. Transurethral resection of prostates and bladder tumours,

j. Rigid and flexible ureteroscopy and retrieval of ureteral calculi, renal calculi etc.

k. Incision of ureterocoele

l. Percutaneous nephrolithotomy.

m. Ultrasound and fluoroscopy guided percutaneous nephrostomy.

n. Antegrade fluoroscopy guided ureteral stenting.

o. Ultrasound guided aspiration cysts and abscesses in the kidney, prostate etc.

p. Open drainage of periurethral abscess.

q. Surgery for hydrocele, testicular biopsy, circumcision, and dorsal slit.

r. Interventional Uroradiology and embolization.

s. USG/CT guided –Renal Mass Biopsy/ Transplant Renal Biopsy

t. Cryoablation, Radiofrequency Ablation (RFA)

4.26 Common urological open ablative and reconstructive procedures

Should be able to perform common open ablative and reconstructive surgical procedures like

a. Nephrectomy (both simple and radical)

b. Pyelolithotomy and Nephrolithotomy (various types)

c. Pyeloplasty

d. Ureterolithotomy

e. Open simple prostatectomy

f. Ureteroneocystostomy

g. Cystolithotomy

h. Suprapubic cystostomy (open, trocar and ultrasound guided techniques)

i. Bladder diverticulectomy

j. Urethroplasties for simple urethral strictures including staged urethroplasties, Buccal mucosa graft, lingual mucosal graft and skin graft urethroplasties

k. Circumcision

l. Urethral dilation.

m. Surgery for Hydrocele

n. Total and partial penectomy

o. Surgery for Priapism

p. Varicocelectomy including microscopic Varicocelectomy

q. Vasectomy

r. Simple and Radical orchiectomy

s. Orchidopexy

t. Testicular biopsy

u. Augmentation Cystoplasty

v. Ileal conduit diversion and various urinary diversion operations

4.27 Specialised urological operative procedures

Should be able to describe the indications, perioperative management, surgical steps, complications, and management of complication of the following urological operations.

a. Renal transplantation and vascular access procedures

i. Live donor nephrectomy for kidney transplantation.

ii. Organ harvesting in a deceased donor.

iii. Kidney transplantation

iv. Vascular access surgery.

v. CAPD catheter insertion

vi. Permcath insertion

b Advanced Uro-oncology procedures

i. Partial nephrectomy

ii. Primary and post chemotherapy retroperitoneal lymph node dissection for urological malignancies

iii. Partial cystectomy iv. Radical cystectomy

v. Radical prostatectomy

vi. Ilioinguinal lymphadenectomy

vii. Continent and non-continent urinary diversion.

c. Advanced reconstructive and female urology procedures

i. Various types of bladder augmentation techniques.

ii. Surgery for ureteral stricture including Psoas hitch, Boari's flap and Ileal replacement of the ureter.

iii. Various techniques of urethral reconstruction.

iv. Implantation of artificial urinary sphincter,

v. Surgical techniques for reconstruction of complex urethral stricture disease in males.

vi. Surgery for urinary incontinence including midurethral sling.

vii. Surgery for urinary fistulae including vesicovaginal, ureterovaginal, urethrovaginal and enterovesical fistulae.

viii. Surgery for Cystocele repair with or without incontinence.

ix. Surgery of Rectocele repair with or without Hymenoplasty. x. Sacrocolpopexy

x. Surgery for electrical stimulation and neuromodulation for lower urinary tract disorders.

xi. Different surgical techniques for reconstruction of urethral stricture disease in females.

xii. Intravesical injection of botulinum toxin

d. Paediatric urology

i. Surgery for vesicoureteral reflux.

ii. Surgery for primary obstructive megaureter.

iii. Paediatric pyeloplasty

iv. PUV ablation

v. Ureterocoele incision

vi. Different surgical techniques for hypospadias correction

vii. Exstrophy-Epispadias surgery

viii. Paediatric Oncology surgeries

e. Andrology

i. Implantation of penile prosthesis for erectile dysfunction

ii. Surgery for Peyronie's disease.

iii. Vasovasostomy.

iv. Vasoepididymostomy

v. Procedures used in sperm retrieval & In-vitro fertilization like PESA/TESA, MICROTESE etc

f. Minimal access surgery in urology

Laparoscopic, and robot assisted laparoscopic ablative and reconstructive urological operations performed for various diseases of the Kidney, Ureter, Bladder, Prostate, Testis, and Penis

4.28 Other clinical skills

Should be able to manage effectively and efficiently

a. Common urological emergencies in the emergency medicine department and wards including patients in other disciplines.

b. Urological emergencies detected or occurring during surgery in other disciplines like bladder or ureteral injuries etc. during surgical, gynaecological procedures.

c. Be able to recognise and refer appropriately cases that are beyond his competence both in the emergency and in the routine setting.

4.29 Teaching and research skills

Should be able to

a. Critically analyse data as well as research papers.

b. Conduct research work in the field of urology by submitting a dissertation.

c. Teach undergraduate students of MBBS, postgraduate students of surgery as well as students of nursing and other paramedical courses the elements of Urology appropriate to them.

4.30 Lifelong learning skills

Should be able to demonstrate knowledge of the

a. Recent advances in the subject of Urology and its allied specialities.

5. Syllabus

5.1 Theory

❖ **Anatomy**

Surgical Anatomy of the Retroperitoneum, Kidneys and Ureters

Anatomy of the Lower Urinary Tract and Male Genitalia

a. Clinical Decision Making

Evaluation of the Urologic Patient: History, Physical Examination, and Urinalysis

Urinary Tract Imaging: Basic Principles

Outcomes Research

b. Basics of Urologic Surgery

Basic Instrumentation and Cystoscopy

Basic of Laparoscopic Urologic Surgery

c. Infections and Inflammation

Infections of the Urinary TractA. Schaeffer

Inflammatory Conditions of the Male Genitourinary Tract

Interstitial Cystitis and Related Disorders

Sexually Transmitted and Associated Diseases

Urological Implications of AIDS and Related Conditions

Cutaneous Diseases of the External Genitalia

Tuberculosis and Other Opportunistic Infections of the Genitourinary System

d. Molecular and Cellular Biology

Basic Principles of Immunology

Molecular Genetics and Cancer Biopsy

Tissue Engineering Perspectives for Reconstructive Surgery.

e. Reproductive and Sexual Function

Male Reproductive Physiology

Male Infertility

Surgical Management of Male Infertility

Physiology of Erectile Dysfunction :Pathophysiology, Evaluation, Nonsurgical Management

Epidemiology, Evaluation, and Nonsurgical Management of Erectile Dysfunction

Prosthetic Surgery for Erectile Dysfunction

Vascular Surgery for Erectile Dysfunction

Peyronie's Disease

Priapism

Androgen Deficiency in the Aging Male

Female Sexual Function and Dysfunction

f. Male Genitalia

Neoplasms of the Testis

Surgery of Testicular Tumors

Tumors of the Penis

Surgery of Penile and Urethral Carcinoma

Surgery of the Penis and Urethra

Surgery of the Scrotum and Seminal Vesicles

g. Renal Physiology and Pathophysiology

Renal Physiology and Pathophysiology

Renovascular Hypertension.

h. Upper Urinary Tract Obstruction and Trauma

Pathophysiology of Obstruction

Management of Upper Urinary Tract Obstruction

Upper Urinary Tract Trauma.

i. Renal Failure and Transplantation

Renal Transplantation

Etiology, Pathogenesis, and Management of Renal Failure

j. Urinary Lithiasis and Endourology

Urinary Lithiasis : Etiology, Epidemiology, and Pathophysiology

Evaluation and Medical Management of Urinary Lithiasis

Surgical Management of Upper Urinary Tract Calculi

Ureteroscopy and Retrograde Ureteral Access

Percutaneous Approaches to the Upper Urinary Tract.

k. Neoplasms of the Upper Urinary Tract

Renal Tumors

Urothelial Tumors of the Upper Urinary Tract

Urothelial Tunors of the Renal Pelvis and Ureter

Open surgery of the Kidney

Laparoscopic Surgery of the Kidney

Ablative Therapy for Renal Tumors.

l. The Adrenals

Pathophysiology, Evaluation, and Medical Management of Adrenal Disorders

Surgery of the Adrenals

m. Urine Transport, Storage, and Emptying

Physiology and Pharmacology of the Renal Pelvis and Ureter

Physiology and Pharmacology of the Bladder and Urethra

Pathophysiology, Categorization, and Management of Voiding Dysfunction

Urodynamic and Video dynamic Evaluation of Voiding Dysfunction

Neuromuscular Dysfunction of the Lower Urinary Tract

Urinary Incontinence : Epidemiology, Pathophysiology, Evaluation, and Overview of Management

The Overactive Bladder

Pharmacologic Management of Storage and Emptying Failure

Conservative Management of Urinary Incontinence: Behavioral and Pelvic Floor Therapy,

Urethral and Pelvic Devices

Electrical Stimulation and Neuromodulation in Storage and Emptying Failure

Retropudic Suspension Surgery for Incontinence in Women

Vaginal Reconstructive Surgery for Sphincteric Incontinence

Pubovaginal Slings

Tension-Free Vaginal Tape Procedures

Injection Therapy for Urinary Incontinence

Additional Treatment for Storage and Emptying Failure

Geriatric Voiding Dysfunction and Urinary Incontinence

Urinary Tract Fistulae

Bladder and Urethral Diverticula

Surgical Procedures for Sphincteric Incontinence in the Male : The Artificial Genitourinary

Sphincter; Perineal Sling Procedures

n. Bladder ; Lower Genitourinary Calculi and Trauma

Urothelial Tumors of the Bladder

Management of Superficial Bladder Cancer

Management of Metastatic and Invasive Bladder Cancer

Surgery of Bladder Cancer

Laparoscopic Bladder Surgery

Use of Intestinal Segments in Urinary Diversion

Cutaneous Continent Urinary Diversion

Orthotopic Urinary Diversion

Genital and Lower Urinary Tract Trauma

Lower Urinary Tract Calculi

o. Prostate

Molecular Biology, Endocrinology, and Physiology of the Prostate and Seminal

Vesicles Etiology, Pathophysiology, and Epidemiology of Benign Prostatic Hyperplasia

Natural History, Evaluation, and Nonsurgical Management of Benign Prostatic Hyperplasia

Minimally Invasive and Endoscopic Management of Benign Prostatic Hyperplasia

Retropubic and Suprapubic Open Radical Prostatectomy

Epidemiology, Etiology, and Prevention of Prostate Cancer

Pathology of Prostatic Neoplasms

Ultrasonography and Biopsy of the Prostate

Tumor Markers in Prostate Cancer

Early Detection, Diagnosis, and Staging of Prostate Cancer

Definitive Therapy of Localized Prostate Cancer : Outcomes

Expectant Management of Prostate Cancer

Anatomic Retrograde Retropubic Prostatectomy

Radical Perineal Prostatectomy

Laparoscopic and Robotic Radical Prostatectomy and Pelvic Lymphadenectomy

Radiation Therapy for Prostate Cancer

Cryotherapy of Prostate Cancer

Treatment of Locally Advanced Prostate Cancer

Management of Rising Prostate-Specific Antigen after Definitive Therapy

Hormonal Therapy for Prostate Cancer

Management of Hormone-Resistant Prostate Cancer.

p. Pediatric Urology

Normal and Anomalous Development of the Urinary Tract

Renal Function in the Fetus

Congenital Obstructive Uropathy

Perinatal Urology

Evaluation of Pediatric Urologic Patient

Renal Disease in Childhood

Urinary Tract Infections in Infants and Children

Anomalies of the Kidney

Renal Dysplasia and Cystic Disease of Kidney

Anomalies and Surgery of the Ureteropelvic Junction

Ectopic Ureter

Vesicoureteral Reflux

Prune-Belly Syndrome

Exstrophy and Epispadias Complex

Surgical Technique for One-Stage Exstrophy Reconstruction

Bladder Anomalies in Children

Posterior Urethral Valves and Other Urethral Anomalies

Voiding Dysfunction in Children : Neurogenic and Non-neurogenic

Urinary Tract Reconstruction

Hypospadias

Abnormalities of External Genitalia in Boys

Abnormalities of Testis and Scrotum : Surgical Management

Sexual Differentiation : Normal and Abnormal

Surgical Management of Intersex

Pediatric Oncology

Pediatric Endourology and Laparoscopy

Pediatric Genitourinary Trauma.

5.2. Practical:

History, examination and writing of records:

a. History taking should include the background information, presenting complaints and the history of present illness, history of previous illness, family history, social and occupational history and treatment history.
b. Detailed physical examination should include general physical and CVS examination
c. Skills in writing up notes, maintaining problem-oriented medical records (POMR), progress notes, and presentation of cases during ward rounds, planning investigation and making a treatment plan should be taught.
d. Other Urology procedures- investigative Urological Procedures like uroflowmetry, CNG, Doppler, Ultrasound & Ultrasound guided procedures.

a. Clinical Teaching

General, Physical and specific examinations of Genitourinary should be mastered. The resident should able to analyse history and correlate it with Clinical findings. He should be well versed with all radiological procedures like IVU, Nephrostogram and RGP, Ascending luelherogram. He should present his daily admissions in morning report and try to improve management skills, fluid balance, choice of drugs. He should clinically analyse the patient & decide for pertinent Investigations required for specific patient.

6. TEACHING AND LEARNING PROGRAM

Teaching programs will need to be held on all working days. (At least one hour per day)

6.1 Activities

Activities
Journal Club
Didactic lectures
Seminars/ Webinars
Hospital (Grand Rounds/Clinical meeting/Audit meet)
Clinical Case Presentation
Presentation to multidisciplinary tumour boards
Interdisciplinary meetings Nephrology /Pathology / Radiology/ Oncology
Morbidity and Mortality Meetings at department and/ or institution level

6.2 METHODS

General principles

The course should be full time and no private practice shall be allowed. Acquisition of practical competencies being the keystone of post graduate medical education, PG training should be skills oriented. Learning in PG program should be essentially self- directed and primarily emanating from clinical and academic work. The formal sessions are meant to supplement this core effort. One formal orientation or induction program shall be conducted for students at institution level and department level to apprise and sensitize them to the objectives of the course and to make them aware of the policies and guidelines of the NMC as well as the policies and protocols of the university, institution and department that the student is registered.

Teaching Methodology

The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision.

Formal teaching sessions

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars/Webinars, journal clubs, clinical meetings, and combined conferences with allied departments, Audit meet, clinical case presentation etc. as per sample schedule given below:

Didactic Lectures

In addition, 10 lectures per year covering recent advances in all aspects of urological diseases with particular emphasis on their surgical and medical management would be taken by faculty. All postgraduate students will be required to attend these lectures.

Mandatory courses prescribed in PGMER

Students are required to complete following mandatory courses prescribed in PGMER during first year

1. Research methodology (as per NMC designated portal)
2. Course in Ethics (to be conducted by institutions or universities.)
3. Course in Cardiac Life Support Skills **(**by the institution)

Other short term basic and clinical courses

The students are also required to attend short term basic and clinical courses on:

- Biostatistics
- Laboratory medicine techniques/courses relevant to management of urological diseases,
- Use of computers, data science management and AI in medicine
- Financial management of a hospital service.
- Ethics and Medical law
- Effective communication in medicine.
- Basic principles of hospital management.
- Hospital infection control practices.

- Human resource management.
- Patient safety measures and continuous improvement of quality of care.
- Good Clinical practice Course

Attend accredited scientific meetings

In addition, student should attend accredited scientific meetings (CME, symposia, and conferences) once or twice a year at National or State or Zonal level.

6.3 Formal training and learning will include:

i. Clinical Genitourinary tract and Adrenal surgery (including history taking, physical examination, diagnosis, selection and planning of investigations and management).

ii. Essentials of nephrology.

iii. Basic medical science applicable to genitourinary tract and Adrenal surgery.

iv. Principles and interpretation of relevant investigations.

v. Performance of common genitourinary tract and Adrenal operations.

vi. Knowledge of history and recent advances in genitourinary tract and Adrenal surgery.

vii. Preparation of scientific papers for publication and presentation in conferences, statistics, and research methodology

viii. Familiarity with the principles and practice of Evidence Based Medicine.

ix. Behavioural, communication and ethical skills training.

x. Training in cost effective methods of urological management.

xi. Hospital infection control practice skills.

xii. Effective human resource management skills training.

xiii. Training in patient safety measures and improvement of quality of care

The modalities for formal training will be as follows:

a) **Seminars/ Webinars:** To be held once a week and presented by the trainee under supervision of teaching faculty.

b) **Journal Clubs:** To be held once a week under supervision of teaching faculty. It should include discussion on recent articles, which relate to various topics in Genitourinary tract and Adrenal surgery and Andrology**.**

c) **Treatment Planning Sessions:** The trainee is to discuss the planning of a given patient who is being worked up for surgery. The idea of this academic exercise is to familiarize the trainee with the objectives of planning in each patient through a group discussion/ multidisciplinary tumour board based on evidence-based medicine.

d) **Clinical grand rounds:** A clinical grand round, involving presentation of unusual and difficult cases, to be done by a resident, once a week, in the presence of all the clinical staff belonging to the Department of Urology. The exercise is to develop the clinical acumen of the trainee.

e) **Teaching and training responsibilities (Pedagogy skills):** A final year M.Ch. trainee should be entrusted with the responsibilities of teaching post-graduate students of General Surgery and Urology.

f) **Attending CME:** The trainee should attend at least one Continuing Urology education program and one conference of urology per year.

g) **Research Publication (Research skills):** The trainee must submit a dissertation as part of the requirements of the course. In addition, the trainee is to be encouraged to publish clinical or original research material in scientific journals. This is to be done under the direct supervision of the supervisor or his associate(s). Through this exercise the trainee would learn how to collect and analyse data, make observations in a scientific manner, and use appropriate statistical methodology. The trainee would learn the art of putting the outcome of observations and results in an appropriate format of a scientific paper that is relevant to a particular journal.

h) **Training in research methodology:** All M.Ch. trainees must complete a dissertation, under the supervision of a principal supervisor/ guide and appropriate number of co-supervisors/ co- guides which would enable the trainee to attain proficiency in collecting clinical / experimental data and analyse them in a scientific way using appropriate statistical methods.

i) **Lecture/discussion:** Lectures on newer topics by faculty, in place of seminar, as per need.

j) **Case presentation**: Post graduate students will present a clinical case for discussion before a faculty and discuss the management.

k) **Radiology conference** should be held regularly in which the radiological features of various cases are discussed.

l) **Surgical-pathological conference**: Special emphasis is made on the surgical pathology and the radiological aspect of the case in the Pathology department.

m) Multidisciplinary tumour board: Where the institution has a multidisciplinary tumour board, the board should meet once a week and the trainee must attend the meetings regularly. In case the institution does not have a multidisciplinary tumour board for managing urological cancers the student should be posted for a period of 6 weeks in a centre having large Uro-oncology workload. A memorandum of understanding between the two institutions must be submitted in this regard.

n) Training / experience in Kidney Transplant Programme

i. Each PG student is expected to be conversant with the protocols (viz. donor and recipient selection and workup, pre-transplant evaluation, Indian brain death law, brain dead donor management - before and during retrieval, donor harvesting procedures, and recipient management - operative and post-transplant care and follow up).

ii. Departments of Urology should preferably have facility for kidney transplantation. However, if the department does not have such a facility, the trainee must be posted for a period of six weeks to a teaching centre with kidney transplant facility performing at least 50 kidney transplants per year in the preceding two years. The institution must have a memorandum of understanding with the teaching centre in this regard.

o) Experiential learning

The training should consist of a programme that provides learning experience to the trainees by being posted in routine and emergency wards, outpatient departments (OPD), and operation theatres (OT). The learning shall be substantially self-directed. The following are the various areas of patient care and management during the M.Ch. training period:

i. Emergency postings: All these are done under direct supervision. The clinical acumen of the trainees and their ability and promptness to deal with emergencies is well developed during this posting. These would include:

a. Resuscitation of emergency patients.

b. Initial assessment and prioritization of the problems.

c. Planning appropriate investigations.

d. Initiating treatment as per management plan.

e. Liaising with ancillary departments for planning further work up and/or management.

ii. Routine postings: In this posting, the candidate is posted in various subunits of the Department of Urology in the form of regular postings, namely main Urology ward, Urology major operation theatre, Urology HDU, routine Urology OPD, Urology minor operation theatre, Urodynamic laboratory, Shockwave lithotripsy facility.

iii. **Speciality Postings**: In addition to posting to ward, OPD, operation theatre, emergency and investigative facilities of Urology, the trainees should be exposed to various allied/ancillary disciplines including nephrology, critical care, kidney transplantation, paediatric urology, Uro-oncology, female urology etc.

iv. **Administrative experience:** The senior-most trainee should be entrusted with administrative responsibilities including academic programme, patient management, functioning of the ward and outpatient department. These may include:

a. Admission of patients.

b. Preparing the operation theatre lists.

c. Improving the functioning in the ward through the supervisor.

d. Preparing list of topics for teaching of junior trainees posted in the department.

e. Organizing the posting of trainees in various workstations of the department as per the demand of the situation

p) A post-graduate student will do at least one of the following to make him/her eligible to appear in his/her final examination:

a. Poster presentation at a National/Zonal/State conference of his/her speciality;

b. Podium presentation at a National/Zonal/State conference of his/her speciality;

c. Have one research paper published/accepted/submitted for publication in journal of his/her speciality as first author

q) Post-graduate students of super Speciality degree courses shall maintain a dynamic e- log book which needs to be updated on a weekly basis about the work being carried out by them and the training programme undergone during the period of training. Provided that M.Ch. students shall mandatorily enter details of surgical procedures assisted or done independently. It shall be the duty of the post-graduate guide imparting the training to assess and authenticate monthly the record (e-Log) books.

r) Department should encourage e-learning activities.

Clinical postings: Recommended schedule for three years training

	Academic course content	**Modules to be completed**
FIRST YEAR	1. Orientation to the Institution & Department. 2. Introduction to OPD, Ward and Patient Care. 3. Introduction to case record maintenance- physical and digital.	1.Research methodology as per (NMC designated portal) 2. Uroradiological module and urological ultrasound module.

	4. Introduction to diagnostic procedures 5. Introduction to preoperative and postoperative care. 6. Comprehensive record maintenance (e-logbook) countersigned by guide every month. 7. Planning and execution of diagnostic cascade. 8. Attending cases in the emergency and casualty services. 9. Assisting at emergency and elective operative procedures. 10. Performing diagnostic urologic procedures. 11. Presentation of recently published articles in the journal club. 12. Attend state/ zonal/ national conferences and workshops and do paper/poster presentations.	3.Basic urodynamic module
SECOND YEAR	1. Assisting juniors in their patient care responsibilities. 2. Performing advanced diagnostic procedures. 3. Assisting seniors at complicated urologic procedures. 4. Supervising clinical and operative work of juniors 5. Assisting seniors during operative procedures 6. Postings of two weeks each in critical care and in nephrology 7. postings of at least 4 to 6 weeks duration in a subspecialty mentioned above in 6(m) and 6(n) 8. Presentation of seminars in departmental classes 9. Attend state/ zonal/ national conferences and workshops and do paper/poster presentations.	1. Low fidelity simulation module. Training in TURP,RIRS, LAP suturing, PCNL. 2. High fidelity simulation module (Optional).
FINAL YEAR	1. Monitoring and providing peer support to juniors in all above activities. 2. Exposure to advanced aspects of urological procedures. 3. Presentation of clinical cases for discussion in front of the	

	faculties. 4. Attend state/ zonal/ national conferences and workshops and do paper/poster presentations.	

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently. For this purpose, provision of skills laboratories in medical colleges is mandatory.

COURSES and Skill learning MODULES	Year 1	Year 2	Year3	CERTIFICATE
Research methodology (as per NMC designated portal	Yes			Yes
Uroradiology ASU/MCU, Reading CECT, MRI and Urological Ultrasound module.	Yes			Institutional
Basic Urodynamic module	Yes			Institutional
Use of computers, Databases, data science management, and AI in medicine	Yes			Institutional
Training in Good Clinical Practice	Yes			Institutional
SKILLS LEARNING ON SIMULATION	YES			Institutional
Low fidelity simulation training		YES		Institutional
High fidelity simulation training		YES		Institutional/Advanced centres

7. Assessment

All the M.Ch. residents are assessed daily for their academic activities and also periodically.

7.1. General Principles

- The assessment is valid, objective and reliable
- It covers cognitive, psychomotor and affective domains.
- Formative, continuing and summative (final) assessment is also conducted in theory as well as practical. In addition, research project is also assessed separately.

7.2. Formative Assessment

- The formative assessment is continuous as well as end of term.
- The former is based on the feedback from the consultants concerned.
- Formative assessment will provide feedback to the candidate about his/her performance and help to improve in the areas they lack.
- Record of internal assessment should be presented to the board of examiners for consideration at the time of final examination.

7.3. Internal Assessment

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sr. No.	Items	Marks
1.	Personal Attributes	20
2.	Clinical Work	20
3.	Academic activities	20
4.	End of term theory examination	20

5.	End of term practical examination	20

1. Personal attributes:

- **Behavior and Emotional Stability:** Dependable, disciplined, dedicated, Stable in emergency situations, shows positive approach.
- **Motivation and Initiative:** Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.
- **Honesty and Integrity:** Truthful, admits mistakes, does not cook up Information, has ethical conduct, exhibits good moral values, loyal to the Institution.
- **Interpersonal Skills and Leadership Quality:** Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

2. Clinical Work:

- **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- **Academic ability:** Intelligent, shows sound knowledge and skills, Participates adequately in academic activities, and performs well in oral Presentation and departmental tests.
- **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and

progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

3. Academic Activity:

Performance during presentation at Journal club/Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

4. End of term theory examination:

End **of 1st, 2nd year and after 2 years 9 months** Conducted by the Department of urology, Yenepoya Medical college hospital.

5. End of term practical/oral examinations:

After 2 years 9 months Conducted by the Department of urology, Yenepoya Medical college hospital .

Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.

Marks for **academic activity** should be given by the all consultants who have attended the session presented by the resident.

The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.

7.4. Summative Assessment

Ratio of marks in theory and practical will be equal.

The pass percentage will be 50%.

Candidate will have to pass theory and practical examinations separately.

There will be a final exam in theory calculated Yenepoya University at the end of 3 years with the following patterns.

A. Theory examination

Sr. No.	Title	Marks
Paper –I	Basic Sciences as related to Urology	100
Paper-II	Clinical Urology	100
Paper-III	Operative Urology	100
Paper-IV	Recent advances in Urology	100
	Total	**400**

After the theory examination there will be practical & viva – Voce examination conducted by Yenepoya University on the following patterns.

B. Practical & Viva-Voce Examination

Sr. no	Subject	Marks
1.	Long Case (1)	100
2.	Short Cases (2) 75 marks each	150
3.	Procedure	50
4.	Grand Viva including Instruments /Radiology /Pathology	100
	Total	**400**

The candidate will be declared to pas M.Ch. degree from Yenepoya University only after the passing separately in theory examination & practical & Viva –Voce Examination.

1. Recommended Books

A. Books (Latest edition)

1) Campbell Walsh Wein Urology. Editors: Alan W. Partin, Roger R. Dmochowski, Louis R. Kavoussi, Craig A. Peters, and Alan J. Wein.
2) The Kelalis – King – Bellman Textbook of clinical Paediatric Urology. Editors: Steven G.Docimo, Douglas Canning, Antoine Khoury, and Joao Louiz Pippi Salle.
3) Smith and Tanagho's General Urology. Editor: Jack W McAninch, and Tom F Lue.
4) Smith's Textbook of Endourology. Editors: Arthur D. Smith, Glen Preminger, Louis Kavoussi, and Gopal Badlani.
5) Hinman's Atlas of Urologic Surgery. Editors: Joseph A. Smith, Stuart S. Howards, Glenn M. Preminger, and Roger R. Dmochowski.
6) Textbook of Female Urology and Urogynecology. Editors: Linda Cardozo, and David Staskin.
7) USI Text Book of Urology, CBS publishers. Pankaj Maheshwari, A Ganpule
8) Kidney transplantation: Principle and Practice. Editors: Stuart J. Knechtle, Lorna P.Marson and Peter J. Morris.
9) Glenn's Urology Surgery. Editors: Sam D. Graham, Thomas E. Keane, and James F.Glenn.
10) Complications of Urologic Surgery: Diagnosis, Prevention and Management. Editors: Samir S. Taneja and Ojas Shah.
11) Practical Urology (Instruments, Pathology, Radiology): A Comprehensive Guide-Ravindra B Sabnis, Arvind P Ganpule, and Sujata K Patwardhan.
12) Atlas of Laparoscopic and Robotic Urologic Surgery. Editors: Jay T. Bishoff and Louis R. Kavoussi
13) Hypospadiology: Principles and Practices. Editor: Amilal Bhat. Springer
14) Pollack Clinical Urography. Editors: Howard M. Pollack and Bruce L. McClennan. Philadelphia: Saunders.
15) Surgery for Urinary Incontinence: Female Pelvic Surgery Video Atlas Series.Dmochowski, Elsevier

16) Atlas of Pediatric Urologic Surgery. Editors: Frank Hinman, Laurence S. Baskin, Elsevier
17) Hinman's Atlas of UroSurgical Anatomy. Editors: Gregory T. MacLennan, Elsevier.
18) Operative Dictations in Urologic Surgery. Editors: Armenakas RM Wiley
19) Abrams Urodynamics. Editors: Marcus Drake, Hashim, Andrew Gammie, Wiley
20) Urologic Principles and Practice. Editors: Chapple CR, Springer
21) Practical Urological Ultrasound. Fulgham P., Springer
22) Textbook of Male Genitourethral Reconstruction. Editors: Francisco E. Martins, Sanjay B. Kulkarni, Tobias S. Köhler, Springer
23) Atlas of Vaginal Reconstructive Surgery. Editor: Raz S, Springer
24) Percutaneous Nephrolithotomy. Editor: Zeng G, Springer
25) Essentials of Pediatric Urology. Editor: Wilcox DT, Taylor and Francis
26) Atlas of Urogynecology. Editor: Karram, Expert Consult
27) Vaginal Surgery for Urologists. Editor: Nitti V, Elsevier

B. Journals (Minimum of One National and one international journal is mandatory)

1. BJU International
2. The Journal of Urology.
3. Urology Gold.
4. Indian Journal Urology
5. European Urology

C. Preferable additional journals.

1. Urologic Clinics of North America.
2. Journal of Endourology.
3. Neurourology Urodynamics

D. Web Resources

Access to web resources, which may include Clinical Key ™, UpToDate ™, PubMed ™, IndMED ™, BJUI Knowledge and / or Cochrane Database, should be made available to the students.

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Annexure-1

Blue Print

Summative Evaluation

Final PG University Examination MD/MS/DM/M.Ch. courses

For all Clinical and Prepara subjects

Distribution of marks for Theory examination

Item	Marks
No. of Theory Papers	4
Marks for each Theory	100
Paper Total marks for	400
Theory Paper Passing Minimum for Theory	200/400 (40% minimum in each paper) Theory – aggregate 50% (In addition, in each Theory paper a candidate has to secure minimum of 40%)

Distribution of marks for Practical examination- Clinical departments

Item	Marks	Total Marks
Long case	1*120	120
Short case	2*60	120
OSCE(Minimum 4 stations and two should be manned stations)	40	40
Dissertation viva	20	20
Subtotal of clinical/practical	300	300

Viva voice	100	100
Grand total	400	400

Practical/Clinical and Viva voce - aggregate 50%

Annexure-2
Model Question Papers

MODEL TEST PAPERS
M.Ch. Urology
Paper - I
BASIC SCIENCES AS RELATED TO UROLOGY

Maximum Marks : 100

Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

Q1:-Write a note on Genitourinary Tuberculosis and its management ?

Q2:-Write a note on pathophysiology of erectile dysfunction and its mangement?

Q3:-Write are the urological implications of AIDS on genitourinary system and its management?

Q4:-Write a note on evaluation & management of upper urinary tract calculi?

Q5:-Write a note on Neurogenic & Non neurogenic urinary bladder?

Q6:-Write a note on evaluation & management of BPH?

Q7:- Write a note on Testicular cancer & its management?

Q8:-Write note on evaluation & management of male erectile dysfunction?

Q9:- Write not an-Etiology,Pathophysiology & epidemiology of urinary calculi?

Q10:- Note on Peyronies Disease?

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MODEL TEST PAPERS
M.Ch. Urology
Paper - II
Clinical Urology

Maximum Marks : 100

Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

Q1:- Write about complications of PCNL ?

Q2:-Write about vascular surgeries for erectile dysfunction?

Q3:-Write about surgery for penile & urethral carcinoma?

Q4:-Surgical management of upper urinary tract calculi?

Q5:-Write about Laparoscopic surgery of renal tumors?

Q6:-Write about injection therapy for urinary incontinence?

Q7:-Complications of TURP?

Q8:-Note on anterior urethoplasty?

Q9:-Note on Radical Perineal Prostatectomy?

Q10:-Surgical Technique of exstrophy reconstruction?

MODEL TEST PAPERS
M.Ch. Urology

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Paper - III
Operative Urology

Maximum Marks : 100
Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

Q1:-Role of Diagnostic laparoscopy in urology?

Q2:-Newer contrast media pertaining to urology?

Q3:-Evaluation of patient of Interstitial cystitis?

Q4:-Urodynamic evaluation in voiding dysfunction?

Q5:-Ureteroscopy & its uses?

Q6:-Percutaneous approaches to upper urinary tract?

Q7:-Evaluation of Adrenal mass?

Q8:-Electrical stimulation & Neuromodulation in emptying & storage factor of Urinary Bladder?

Q9:-Uses of TRUS in urology?

Q10:-Tumor markers in Prostate cancer?

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MODEL TEST PAPERS
M.Ch. Urology
Paper - IV
Recent Advances in Urology

Maximum Marks : 100
Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

Q1:- Firefly technology in Urology?

Q2:-Note on ablative therapies of renal tumours?

Q3:-Cryotherapy of prostate cancer?

Q4:-Molecular genetics & cancer biology of renal cell carcinoma?

Q5:-Tissue engineering perspectives for reconstructive surgery in urology?

Q6:-Role of immune modulators in renal cell carcinoma?

Q7:-Newer techniques in management of male infertility?

Q8:-Note on orthotopic urinary diversion?

Q9:-Tumor markers in urology?

Q10:-Recent advances in treatment of interstitial cystitis?

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DEPARTMENT OF UROLOGY

Current plan of formative assessment for post graduates

Theory	1.Monthly written test
Clinical/practical	1. case presentations- scored 2. special case discussion as CBD –scored 3. DOPS 3. Quarterly OSCE
Viva voce	1. Scorings of seminar

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ANNEXURE-3

CHECKLISTS

POSTGRADUATE STUDENTS' APPRAISAL FORM

Clinical Disciplines : Name of the Department/Unit
: Name of the PG Student :

Period of Training :
FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1.	Journal based / recent advances learning				
2.	Patient based/ Laboratory or Skill based learning				
3.	Self-directed learning and teaching				
4.	Departmental and interdepartmental learning activity				
5.	External and Outreach Activities / CMEs				
6.	Thesis / Research work				
7.	Logbook Maintenance				

Publications
Yes/ No

Remarks*_____

*****REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual

feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE **SIGNATURE OF CONSULTANT**
SIGNATURE OF HOD

Format of Model Check Lists

Check List – I.

MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student: Date:

Name of the Faculty / Observer:

Sl No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper / subject					
6.	Audio-Visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

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Check List – II

MODEL CHECK-LIST FOR EALUATION OF SEMINAR PRESENTATIONS / JOURNAL CLUB

Name of the Student: Date:

Name of the Faculty / Observer:

SI No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of Preparation / Article chose was					
4.	Clarity of Presentation / Audibility / Proficiency in language					
5.	Understanding of subject / knowledge in the subject					
6.	Ability to answer questions / interaction					
7.	Time scheduling / attitude / body language					
8.	Appropriate use of Audio-visual aids					
9.	Overall Performance					
	Total Score					

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CHECK LIST – III

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD

(To be completed once a month by respective Unit Heads)

Name of the Student: Date:

Name of the unit Head:

Sl. No.	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work up					
7.	Beside manners					
8.	Rapport with patients					
9.	OT work					
	Post-op & follow-up					
10.	Overall quality of Ward work					
	Total Score					

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CHECK LIST – IV

EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student: Date:

Name of the Faculty:

Case Presented:

Sl. No.	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history with all relevant points elicited					
2.	Clarity of Presentation / Audibility					
3.	Mentioned all positive and negative points of importance					
4.	Accuracy of general physical / local examination					
5.	Diagnosis Whether it follows logically from history and findings					
6.	Approach to the management, investigations & step by step discussion of treatment with application of logic & relevance					
7.	Proficiency of language & knowledge of the subject					
	Grand Total					

CHECK LIST – VI

EVALUATION FORM FOR CASE BASED DISCUSSION

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Name of the Student: Date:

Name of the Faculty:

Case Complexity: Low / Moderate / High

Basis for Discussion: Out patient record / In patient record / Discharge summary / other

If others- Specify:

Brief description of case including curricula areas covered:

Sl. No.	Points to be considered	Well below expectation	Below expectation	Borderline expectation	Meets expectation	Above Expectation	Well above Expectation	Unable to comment
1.	Medical Record Keeping							
2.	Clinical Assessment							
3.	Investigations and referrals							
4.	Management plan							
5.	Follow up and future planning							
6.	Overall clinical judgement							
	Grand Total							

Which aspects of the encounter were done well? :

Any suggested areas for development:

Agreed action:

END