الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

Neurourology Fellowship


بسم الله الرحمن الرحيم

PREFACE

- The primary goal of this document is to enrich the training experience of postgraduate trainees by outlining the learning objectives for them to become independent and competent future practitioners.
- This curriculum may contain sections outlining regulations of training; however, the latest versions of such regulations need to be sought by referring to the “General Bylaws” and “Executive Policies” published by the Saudi Commission for Health Specialties (SCFHS), which can be accessed online through the official SCFHS website. In case there is a discrepancy in the statements of regulations, then that stated in the most up-to-date bylaws and executive policies will apply.
- As this curriculum is subject to periodic revision, please refer to the electronic version posted online for the most up-to-date edition at: www.scfhs.org.sa

I. CONTRIBUTORS

This curriculum was prepared and reviewed by the Specialty's Scientific & Curriculum Development Committee:

- Dr. Ali Al Abbad
- Dr. Yahya Ghazwani
- Dr. Riyad Al Mousa

Curriculum Review Committee Members

- Dr. Mai Alajaji, Msc.MedEd, PhD
- Dr. Nouf Alrumaihi MBBS, Msc.MedEd., PMP

Approved by Head of Curriculum Review Committee

- Dr. Ali Alassiri, MBBS, Msc.MedEd. FRCSC, FACS

II. COPYRIGHT STATEMENTS

Correspondence: Saudi Commission for Health Specialties P.O. Box: 94656 Postal Code: 11614 Contact Center: 920019393

E-mail: Curricula@scfhs.org.sa
website: www.scfhs.org.sa

III. FORWARD

The neuro-urology Fellowship curriculum development team acknowledges the valuable contributions and feedback of the scientific committee members in the development of this program. We extend our special appreciation and gratitude to all the members who have been pivotal in the completion of this booklet, especially the Curriculum Group, the Curriculum Specialists, and the Scientific Council. We would also like to acknowledge that the framework of the program is a similar to the neuro-urology Fellowship of the University of Toronto, Canada, and many of the description's competencies have been acquired from their resources.

IV. TABLE OF CONTENTS

V. INTRODUCTION

Context of practice

Neuro-urology is a subspecialty of urology that covers research on and clinical management of various voiding dysfunctions and functional urological conditions that require special expertise and skills for their proper management. It is a rare subspecialty worldwide that is not available in the majority of the hospitals in the Kingdom of Saudi Arabia.

Neuro-urology became known world-wide in the mid-70s and early 80s of the 20th century, when the knowledge of care and management of neuro-urological diseases started to rapidly accumulate and grow with astonishing clinical outcomes.

Although it is considered a new subspecialty, it is a highly active specialty involving a multitude of urological conditions that present a variety of management aspects and need personalized management from urologists specializing in this field. Worldwide, approximately one in six people suffer from bladder problems, (1) with a prevalence ranging from 10 to 35% of significant symptoms that might need medical intervention (2). In our country in particular, the prevalence of bladder dysfunction problems is similar to international levels (3).

Road injuries are considered the second most common cause of death. From this data we can imagine the huge burden on this subspecialty among only one category of patients who need continuous neuro-urological care (patients with traumatic spinal cord injuries). The field of neuro-urology in Saudi Arabia started at the beginning of the 21st century, and as Saudi fellows have returned after their fellowships, we have now more than 20 specialized neuro-urologists across the country.

What is neuro-urology?

Neuro-urology is a subspecialty of urology that deals with various urinary tract system disorders that result from neurological and functional urology diseases. The effects of neurological diseases on the urinary tract system can be very

complex, with a diversity of functional disturbances that pose great challenges to diagnosing and managing this category of patients. Those urinary functional disturbances can be related to storage symptoms (e.g., urgency, frequency, urge incontinence) or voiding symptoms (e.g., urinary retention, incomplete emptying, dribbling, hesitancy), or both. The type, extent, and location of neurological diseases vary, and each has different impact on the urinary tract system. The role of the neuro-urologist is to restore the maximum urinary tract function and preserve renal function, thereby positively influencing the patients' quality of life.

Neurological diseases can be congenital or acquired. The candidate will be trained to manage neuro-urological diseases that might be associated with the following:

- Urinary incontinence
- Traumatic spinal cord injuries
- Parkinson's disease
- Alzheimer's disease
- Multiple sclerosis
- Movement disorders
- Cerebrovascular disease (e.g., stroke)
- Diabetes
- Spinal cord or brain tumors
- Cerebral palsy
- Post spine surgery
- Post vertebral disk surgery
- Post traumatic brain injury
- Bladder or sexual dysfunction following pelvic surgery
- Bladder dysfunction of unknown cause

Goals and responsibilities for curriculum implementation

This curriculum seeks to guide trainees ultimately to become competent in their respective specialties. This goal requires a significant amount of effort and coordination from all stakeholders involved in postgraduate training. As *"adult-learners,"* trainees must be proactive, fully engaged, and exhibit the following: a careful understanding of learning objectives, self-directed learning, problem

solving, an eagerness to apply learning by means of reflective practice based on feedback and formative assessment, and self-awareness and willingness to ask for support when needed. The overall goals of the neuro-urology program are as following:

- Upon graduation from the program to ensure that the fellow is at the neuro-urologist consultant level of acquired knowledge, skills, attitude, and competency, with a strong background in research and basic science.
- To prepare a trainee to be highly competent, safe, and independent in clinical work in the field of neuro-urology.
- Create creative future teachers, trainers, and researchers to teach and supervise the next generations.
- To develop and practice management and organizing organizational skills.
- To develop and practice communication skills with colleagues, other departments, and patients.

The candidate is also expected to be able to competently diagnose different conditions and formulate a treatment plan targeting each patient's unique set of symptoms. There are several screening and diagnostic tools will be mastered by the candidate during the training period, including:

- Urodynamic studies (Video and non-video, with and without pressure flow study)
- Uroflowmetry
- Pelvic nerve examination (PNE)
- Imaging studies (X-ray, Ultrasound, CT…etc.)

The candidate is expected to have high exposure to conservative, minimally invasive surgeries as well as to major surgeries to treat this group of patients:

- Able to describe and explain the techniques of conservative treatment (physiotherapy, biofeedback, time voiding, behavioral modification, etc.)
- To be familiar with all pharmacological treatments, their indications, side effects, contraindications, and alternatives.
- To have gained substantial exposure to minimal invasive surgeries or procedures like botulinum toxin injections and percutaneous tibial nerve stimulation (PTNS).
- To describe the steps, techniques, and indications of major surgeries like bladder augmentations, urinary diversions, sacral neuromodulations (SNM), sphincterotomies, and continent surgeries.

Clinical research plays an important role in this subspecialty, as seen in the fact that many new therapies and procedures were discovered in the last decade with distinguishable outcome. The candidate will be involved in research activities during his training, starting with a research question in the area of interest and ending with the presentation and discussion of the results with the research mentor and experts in this field.

The program director plays a vital role in ensuring the successful implementation of this curriculum. Moreover, the training committee members, particularly the program director, have a significant impact on program implementation. Trainees should be called upon to share responsibility in curriculum implementation. The Saudi Commission for Health Specialties (SCFHS) applies the best models of training governance to achieve the highest quality of training. Additionally, the academic affairs offices in the various training centers and the regional supervisory training committee play a major role in training supervision and implementation. The Specialty Scientific Committee will guarantee that the content of this curriculum is constantly updated to match the highest standards in postgraduate education of each trainee specialty.

VI. ABBREVIATIONS USED IN THIS DOCUMENT

Abbreviation	Description
SCFHS	Saudi Commission for Health Specialties
F (1)	(First) year of fellowship
F (1)	(First) year of fellowship
F (2)	(Second) year of fellowship
CER	Continuous Evaluation Report
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
Mini-CEX	Mini-Clinical Experience report
DOPS	Direct Observation of Procedural Skills report
CBD	Case-Based Discussion report
CBE	Competency-Based Education
ITER	In-Training Evaluation Report
COT	Consultation Observation Tool

VII. PROGRAM ENTRY REQUIREMENTS

The Program Entry Requirements are as follows:

- Saudi Board of Urology or equivalent certificate.
- Professional classification as having attained a senior registrar rank in urology, or passing the final written examination of the Saudi Board of Urology and registered for the final oral exam. The Saudi Board of Urology certificate shall be obtained before sitting for the final examination of the subspecialty.
- The candidate shall pass the medical examination for admission (the entry physical exam) according to the requirements of the fellowship program.
- The candidate shall provide a sponsorship letter stating that the candidate can be enrolled in full-time training in the fellowship program for the entire training period.
- The candidate shall be responsible for full training, examination, and certificate fees payment.
- The candidate must pass the interview held by the respective fellowship program committee.
- Three recommendation letters.
- Curriculum vitae.
- Valid identification document.
- For further information, please refer to the updated Bylaws and Executive Policy of SCFHS on Admission and Registration (available at SCFHS website).

VIII. LEARNING AND COMPETENCIES

1. Introduction to learning outcomes and competency-based education

Training should be guided by well-defined "*learning objectives*" that are driven by the "*learning outcomes*" of a particular program targeted to serve specific specialty needs. Learning outcomes are intended to reflect the professional "*competencies*" and tasks that are to be "*entrusted*" by trainees upon graduation. This will ensure that graduates meet the demands of the healthcare system and patient care expected in relation to their particular specialty. *Competency-based education* (CBE) is an approach of "*adult-learning*" that is based on achieving *pre-defined*, *fine-grained,* and *well-paced* learning objectives that are driven by complex professional competencies.

Professional competencies related to healthcare are usually complex and involve a mixture of multiple learning domains (knowledge, skills, and attitude). CBE is expected to change the traditional way of postgraduate education. For instance, time of training, though a precious resource, should not be looked to as a proxy for *competence* (e.g., time of rotation in certain hospital areas is not the primary marker of competence achievement). Furthermore, CBE emphasizes the critical role of an informed judgment of the learner's competency progress, which is based on a staged and formative assessment that is driven by multiple workplace-based observations.

The clinical neuro-urology fellowship program comprises clinical and research learning skills to provide expert and skilled neuro-urological surgeons. The program improves the art and science of neuro-urology through basic applied clinical research and clinical expertise in the management of neurogenic bladder, urodynamic, overactive bladder, female urology and pelvic floor dysfunction, performing screening tests, implanting neurostimulators, and managing patients with various voiding dysfunction disorders. The fellow will learn how to design and

conduct basic and clinical studies and to write and present abstracts at national and international conferences. SCFHS has endorsed the CanMEDs to articulate professional competencies. This curriculum applies principles of competency-based medical education, within which CanMEDs represents a globally accepted framework for outlining competency roles. The “CanMEDs 2015 Framework” has been adopted in this section.

This reference to the CanMEDs competency is from: Frank JR, Snell L, Sherbino J, editors. CanMEDs 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015)

2. Overall program learning outcomes

The overall program learning outcomes according to the CanMEDs roles have been endorsed by SCFHS to articulate professional competencies:

- Medical Expert
- Communicator
- Collaborator
- Leader
- Health Advocate
- Scholar
- Professional

Medical Expert

- Establish and maintain clinical knowledge, skills, and attitudes appropriate to the training level in the field of neuro-urology:
    1. Apply knowledge of the clinical, socio-behavioral, and fundamental biomedical sciences relevant to the urinary tract system, particularly the lower urinary tract system, including the:
        - Embryology, anatomy, physiology, and pathology of urinary tract system.
        - Principles of biochemistry, molecular biology, and genetics as they apply to the urinary tract system.
        - Principles of metabolism, pharmacokinetics, pharmacodynamics, and toxicity of drugs commonly used in neuro-urology.
        - Principles of surgeries related to neuro-urology

- General and focal neurological diseases affecting the urinary tract system, including the epidemiology, pathophysiology, and methods of diagnosis, management, and prognosis of such diseases.
- Indications, interpretations, limitations, and complications of diagnostic procedures performed in neuro-urology.
- Advances in the management of voiding dysfunction, for example, neuromodulation.

- Perform a complete and appropriate patient assessment:
  1. Obtain a history that is relevant, concise, and accurate regarding the context and preferences for the purposes of prevention and health promotion, diagnosis, and/or management.
  2. Practice a focused physical examination, namely the neuro-urological exam, that is relevant and accurate for the purposes of prevention and health promotion, diagnosis, and/or management.
  3. Select and interpret medically appropriate investigative methods in a resource-effective and ethical manner, including urinary tract ultrasound, urodynamic studies, CT, MRI, nuclear studies, and diagnostic cystoscopies.
  4. Appropriately use clinical data to formulate problems and correctly develop investigation and management plans to deal with patient problem(s).
  5. Demonstrate effective clinical problem-solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnoses and management plans for: neurogenic bladder, incontinence, pelvic pain syndromes, pelvic organ prolapse, bladder outlet obstruction, and other voiding dysfunction disorders.
  6. Demonstrate the ability to recognize, and evaluate urological emergencies and surgical complications.

- Effectively use preventive and therapeutic interventions:
  1. Implement an effective management plan in collaboration with patients and their families.
  2. Demonstrate the effective, appropriate, and timely application of preventive and therapeutic interventions relevant to the physician's practice.
  3. Ensure that appropriate informed consent is obtained for therapies.
  4. Ensure patients receive appropriate end-of-life care.

- Demonstrate the proficient and appropriate use of procedural diagnostic and therapeutic skills:
    1. Demonstrate the effective, appropriate, and timely performance of diagnostic and therapeutic procedures relevant to neuro-urology.
    2. Appropriately document and disseminate information related to the performed procedures and their outcomes.
    3. Ensure that adequate follow-up is arranged for performed procedures.

Communicator

- Develop rapport, trust, and ethical therapeutic relationships with patients and families:
    1. Establish positive relationships with patients and their families that are characterized by understanding, trust, respect, honesty, and empathy.
    2. Respect patient confidentiality, privacy, and autonomy.
    3. Listen effectively.
    4. Recognize and response to nonverbal cues.
    5. Facilitate a structured clinical encounter.
    6. Conduct good communication in order to obtain a thorough and relevant patient history.
- Accurately elicit and synthesize relevant information, including the perspectives of patients, families, colleagues, and other professionals:
    1. Gather information about the disease but also about the patient's beliefs, concerns, expectations, and illness experience.
    2. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers, and other professionals.
- Accurately convey relevant information and explanations to patients, families, colleagues, and other professionals:
    1. Deliver information to a patient and family, colleagues, and other professionals in a human, authentic manner and in such a way that it is understandable and encourages discussion and participation in decision-making.
- Develop a common understanding of issues, problems, and plans with patients, families, colleagues, and other professionals to develop a shared care plan:
    1. Recognize and explore problems to be addressed from a patient encounter, including the patient's context, responses, concerns, and preferences.

2. Respect diversity and differences, including but not limited to the impact of gender, religion, and cultural beliefs on decision-making.
3. Encourage discussion, questions, and interaction in the encounter.
4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care.
5. Effectively address challenging communication issues such as obtaining informed consent, delivering bad news, and addressing anger, confusion, and misunderstanding.

- Convey effective oral and written information about a medical encounter:
  1. Maintain clear, accurate, and appropriate records.
  2. Effectively present verbal reports of clinical encounters and plans.
  3. Effectively present medical information to the public or media about a medical issue.
  4. Demonstrate effective consultation skills in presenting well-documented assessments and recommendations in written and/or verbal form.

Collaborator

- Participate effectively and appropriately in an interprofessional health care team:
  1. Describe the roles and responsibilities of other professionals within the healthcare team.
  2. Recognize and respect the diversity of roles, responsibilities, and competencies of other professionals in relation to their own.
  3. Work with others to assess, plan, provide, and integrate care for individual patients or groups of patients.
  4. Participate effectively in interprofessional team meetings.
  5. Respect team ethics, including confidentiality, resource allocation, and professionalism.
  6. Demonstrate leadership in their healthcare team, as appropriate.

- Effectively work with other health care professionals to prevent, negotiate, and resolve interprofessional conflict:
  1. Respectful attitude toward other colleagues and members of an interprofessional team.
  2. Work with other professionals to prevent conflicts.
  3. Apply collaborative negotiation to resolve conflicts.

4. Respect differences, misunderstandings, and limitations in other professionals.

Health Advocate

- Respond to an individual patient's health care needs and issues:
  1. Identify the health needs of an individual patient and opportunities for advocacy, health promotion, and disease prevention
- Respond to the health needs of the communities that they serve:
  1. Identify opportunities for advocacy, health promotion, and disease prevention in the communities they serve.
  2. Describe, in broad terms, the key issues currently under debate regarding changes in healthcare system
- Identify the health determinants of the populations that they serve:
  1. Identify the determinants of health for populations, including barriers to access to care and resources, and apply this understanding to common problems and conditions in neuro-urological disease.
  2. Identify vulnerable or marginalized populations within those served, applying the available knowledge about prevention to at-risk groups within the practice.
- Promote the health of individual patients, communities, and populations:
  1. Describe approaches to implementing changes in the determinants of health of the populations they serve.
  2. Describe how public policy impacts the health of the populations served.
  3. Describe the inherent ethical and professional issues in health advocacy, including altruism, social justice, autonomy, integrity, and idealism.
  4. Acknowledge the possibility of conflict inherent in their role as health advocates for patients or communities with the roles of managers or gatekeepers.
  5. Describe the role of the medical profession in collectively advocating for health and patient safety.

Leader:

- Manage daily clinical activities in an efficient and organized manner:
  1. Work collaboratively with others in their organizations.
  2. Demonstrate administrative and organizational skills in various clinical settings.
  3. Participate in systemic quality process evaluation and improvement, including patient safety initiatives.

4. Describe principles of healthcare financing, including physician remuneration, budgeting, and organizational funding.
5. Describe the principles of developing interprofessional and multidisciplinary teams in the neuro-urology clinic.

- Effectively balance personal and professional activities.
- Develop an approach to resource management in clinical settings as well as on a provincial and national level.
- Participate in activities that contribute to the effectiveness of their health care organizations and systems.
- Serve in administration and leadership roles, as appropriate.

Scholar

- Maintain and enhance professional activities through ongoing learning:
  1. Describe the principles and strategies for implementing a personal knowledge management system.
  2. Recognize and reflect learning issues in practice.
  3. Integrate new learning into practice.
  4. Evaluate the impact of any change in practice.
  5. Document the learning process.
  6. Demonstrate knowledge of new advances in management.
- Critically evaluate information and its sources and apply this appropriately to practice decisions.
- Facilitate the learning of patients, families, students, residents, other health professionals, the public, and others, as appropriate.
- Contribute to the creation, dissemination, application, and translation of new medical knowledge and practices.

Professional

- Function effectively by integrating all CanMEDs roles to provide optimal, ethical, and patient-centered medical care:
  1. Effectively perform a consultation, including the presentation of well-documented assessments and recommendations in written and/or verbal form in response to a request from another healthcare professional.
  2. Identify and appropriately respond to relevant ethical issues arising in patient care.
  3. Effectively and appropriately prioritize professional duties when faced with multiple patients and problems.

4. Demonstrate compassionate, patient-centered care

- Recognize and respond to ethical dimensions in medical decision-making.
- Seek appropriate consultation from other health professionals as needed:
  1. Demonstrate insight into their own limitations of expertise via self-assessment.
  2. Demonstrate effective, appropriate, and timely consultation with other health professionals as needed for optimal patient care.
  3. Arrange appropriate follow-up care services for patients and their families.
  4. Demonstrate a commitment to physician health and sustainable practice; a commitment to uphold the highest standards of ethical and professional behavior in regard to research and industry.
- Ensure appropriate informed consent is obtained for procedures.

3. Program duration

The Saudi Neuro-Urology Fellowship Program lasts two years.

4. Program rotations

Each year of training consists of 13 blocks (each block is 4 weeks), including four weeks of annual vacation.

Training Year	Mandatory core rotations*			Elective rotations**		
	Rotation name	Duration	Setting	Rotation name	Duration	Setting
F1	• Neuro-Urology Rotation Research Vacation	8 blocks 1 block 1 block	• Inpatients and outpatients	• Neuro-urology in external site. • Neurology. • Pediatric urology. • Colorectal surgery. • Urogynecology	3 out of 5 rotations One block each rotation	• Inpatients and outpatients
F2	• Neuro-Urology Rotation Research Vacation	8 blocks 1 block 1 block	• Inpatients and outpatients	• Neuro-urology in external site. • Neurology. • Pediatric urology. • Colorectal surgery. • Urogynecology	3 out of 5 rotations One block each rotation	• Inpatients and outpatients

4.1. First year (F1):

1. Neuro-Urology Rotation (core rotation), which will be carried out at the primary clinical site (8 blocks), includes:
    - Two voiding dysfunction / neuro-urology clinics per week and one General urology clinic per week supervised by mentor.
    - One neuromodulation clinic per week.
    - Full-day urodynamic studies per week.
    - One to two operation days including major and minor surgeries.
    - Inpatient service and consultations related to neuro-urology.
2. Elective rotation in one of the following subspecialities (3 blocks):
    - Neuro-urology in external site.
    - Neurology.
    - Pediatric urology.
    - Colorectal surgery.
    - Urogynecology.
3. Protected research (1 block).
4. Annual vacation (1 block).

3.2. Second year (F2):

1. Neuro-Urology Rotation (core rotation), which will be carried out at the primary clinical site (8 blocks), includes:
    - Two voiding dysfunction / neuro-urology clinics per week and one general urology clinic per week supervised by mentor.
    - One neuromodulation clinic per week.
    - Full-day urodynamic studies per week.
    - One to two operation days including major and minor surgeries.
    - Inpatient service and consultations related to neuro-urology.
2. Elective rotation in the one of the following subspeciality (3 blocks):
    - neuro-urology in external site.
    - Neurology.
    - Pediatric urology.
    - Colorectal surgery.
    - Urogynecology.
3. Protected research (1 block).
4. Annual vacation (1 block).

Neuro-Urology Rotation

During this rotation, the fellow is expected to perform the following duties:

- Attending voiding dysfunction/neuro-urology and general urology clinics under supervision of the mentor.
- Providing outpatient and inpatient medical care to patients independently, senior fellow supervising junior fellow and residents.
- Follow patient's progress and supervising juniors' documentations (history and physical examination, progress notes, discharge summary, medical reports).
- Performing diagnostic procedures and interpreting labs, radiological and other tests related to general urology and neuro-urology.
- Setting differential diagnoses.
- Applying communication skills with colleges, other departments, and patients.
- Decision making and writing management plan under supervision of consultant.
- Participation in surgical procedures, senior fellow performs the procedures independently and supervising juniors.
- Attending department morning reports and leading daily rounds.
- Teaching and supervising residents and medical students during their rotation in neuro-urology.
- Responsibility will gradually increase through the period of training.

During Neuro-Urology Rotation, the following knowledge, skills, and attitudes will be acquired:

Knowledge:

- Neurophysiology and functional anatomy of lower urinary tract system.
- Pathophysiology of neurogenic bladder, overactive bladder, urinary incontinence, urinary retention, pelvic pain syndromes, and other voiding dysfunction disorders.
- Indications, contraindications, pharmacology, and pharmacokinetics of antibiotics used in treatment of urinary tract infections, anticholinergics, B3 agonists, alpha blockers, botulinum toxin, desmopressin, and other medications used in the treatment of voiding dysfunctions and disorders.
- Management guidelines of various voiding dysfunctions and disorders.
- Urodynamic principles, indications, and interpretations.

- Neuromodulation, types, mechanisms, and indications.
- Management of neurogenic bladder.
- Anti-incontinence surgeries, its indications and contraindications.
- Indication and interpretation of laboratory and radiological investigations related to neuro-urology.

Skills:

- Full neurological physical exam.
- Sitting, calibrating, and performing urodynamic study.
- Performing posterior tibial nerve stimulation.
- Programming of sacral neuromodulation.
- Sacral neuromodulation implantation, explanation.
- Managing autonomic dysreflexia (emergency).
- Anti-incontinence procedures (sling surgeries, injection of bulking agents, artificial urethral sphincter insertion).
- Surgical management of bladder outflow obstruction.
- Intravesical botulinum toxin injection.
- Dealing with complications of neuro-urological procedures.

Attitude:

- Follows healthcare system polices and rules.
- Understanding and practicing different legal and ethical aspects of the subspeciality.
- Maintaining up-to-date skills and professional knowledge.
- Making patient care the first concern.
- Honesty, reliability, and dependability.
- Respects patients' rights, privacy, and dignity.
- Securing confidential information.
- Respecting patients' views and treating them politely.
- Teaching and supervising junior colleagues.
- Accountability toward patients, colleagues, and society.
- Respecting and working with other healthcare members in harmony

Elective Rotations

The fellow will have an elective rotation with three blocks duration every year, and

shall have the option to select a rotation where he/she needs to strengthen his/her knowledge, skills, and competencies.

1. Neuro-urology in external site:

Can be done inside or outside the kingdom.

2. Neurology:

The fellow will attend and participate actively in outpatients' clinics, inpatient rounds, specialized neurological investigations, and management plans and be involved in grand rounds and neurology scientific meetings.

Objectives of the rotation:

- Describe the neurophysiology of the lower urinary tract.
- Perform proper neurological examinations and interpretations of neurological investigations.
- Explain neuropathology and the effect of neurological diseases on the lower urinary tract.
- Manage neurological conditions affecting the lower urinary tract.

3. Pediatric urology:

This rotation includes inpatient rounds, clinics, and grand rounds, taking part in investigations, management plans, and pediatric urological surgeries, and attending scientific meetings.

Objectives of the rotation:

- Evaluate and manage pediatric patients with lower urinary tract dysfunctions, like patients with neurogenic bladder, dysfunctional voiders, and other issues.
- Explain the indications and role of biofeedback in children with lower urinary tract surgeries.
- Outline the indication and role of bladder augmentation and urinary diversions.

4. Colorectal surgery:

This rotation includes inpatient rounds, clinics, and grand rounds, taking part in investigations, management plans, and colorectal surgeries, and attending scientific meetings.

Objectives of the rotation:

- Evaluate and manage patients with urgency, fecal incontinence, constipation, and rectocele.
- Explain the role of biofeedback in bowel dysfunction.
- Manage bowel injury during pelvic reconstructive surgeries.

5. Urogynecology:

This rotation includes inpatient rounds, clinics, and grand rounds, taking part in urogynecological specialized examinations and investigations, management plans, and urogynecological surgeries, and attending scientific meetings.

Objectives of the rotation:

- Evaluate and manage patients with urogenital fistulas.
- Manage ob/gyn complications related to the urinary tract.
- Evaluate and manage pelvic organ prolapse.

Protected Research Rotation

- A one-month, full-time rotation in research is conducted every year. The fellow is not expected to finish the study during the month, so completion of the study should continue parallel to other works.
- The research will be supervised by a supervisor chosen by the fellow.
- Attendance of research courses or workshops to improve research skills are strongly recommended.
- The research proposal should be accepted by the Neuro-Urology Research Committee and must be submitted by the end of the first 3 months.
- At least one oral abstract should be presented at the end of the 1st year of the fellowship and the second abstract should be presented at the end of the 2nd year of the fellowship.
- Presenting the study results at national and/or international meetings and publishing the work in respected journals is strongly recommended.
- Attendance at designated courses/lectures and scoring of the research abstract presentation will be monitored and incorporated into the annual evaluation score.

During Research Rotation the following knowledge, skills, and attitudes will be acquired:

Knowledge:

- Basic principles of research design, methodology, data analysis, and clinical epidemiology, and their advantages and disadvantages from the perspective of neuro-urology.
- Awareness of the current research topics in neuro-urology using available medical informatics systems.

- Contributions of scientific research to improving the health of patients and communities.

Skills:

- Practicing appropriate methods for writing a research manuscript, data collection, and analysis and discussion of result.
- Acquiring skills for scientific presentations and public discussions.
- Conveying and discussing scientific research to scientific communities through posters, abstracts, teaching slides, manuscripts, or other scientific communications.
- Ability to pose an appropriate research question, recognize and identify gaps in knowledge and expertise around this question, and formulate an appropriate study design to answer it.

Attitude:

- Follows healthcare system polices and rules.
- Securing confidential information.
- Outlining the ethical requirements of research and responsibly using the informed consent.
- Honesty, reliability.
- Upholding ethical and professional expectations of research consistent with institutional review board guidelines, including meticulous maintenance of data and conduct of ethical research.
- Communicate and collaborate effectively with other research members to conduct the research.

IX. CONTINUUM OF LEARNING

This includes learning that should take place in each key stage of progression within the subspecialty. Fellows are reminded of the fact of life-long Continuous Professional Development (CPD). Fellows should keep in mind the necessity of CPD for every healthcare provider in order to meet the demands of their vital profession. The following table (Table 1) states how the role is progressively expected to develop throughout the junior, senior, and consultant levels of practice.

Table 1

Specialty General Practice	F1 (Junior Level)	F2 (Senior Level)	Consultant sub specialist
Sub-specialty/Non-practicing	Dependent/supervised practice	Dependent/supervised practice	Independent practice/provide supervision
Obtain basic health science and foundational level to core discipline knowledge	Obtain fundamental knowledge related to core clinical problems of neuro-urology	Apply knowledge to provide appropriate clinical care related to core clinical problems of neuro-urology	Acquire advanced and up-to-date knowledge related to core clinical problems of neuro-urology
Internship to the practice of discipline.	Apply clinical skills such as physical examination and practical procedures related to the core presenting problems and procedures of neuro-urology	Analyze and interpret the findings from clinical skills to develop appropriate differential diagnoses and management plan for the patient.	Compare and evaluate challenging, contradictory findings and develop expanded differential diagnoses and management plan.

X. TEACHING METHODS

The teaching process in the fellowship program is based mainly on the principles of adult learning theory. The trainees must feel the importance of learning and taking an active role in the content and process of their own learning. The training programs implement the adult learning concept of each feature of the activities such that the fellows are responsible for their own learning requirements. Formal training time would include the following three formal teaching activities:

- Program Specific Learning Activities
- Universal topics
- General Learning Opportunities

Program Specific Learning Activities:

The program specific activities are educational activities that are specifically designed and intended for trainees' teaching during their training time. The trainees are required to attend these activities, and non-compliance can subject trainees to disciplinary actions.

A) Program academic half-day:

The academic half day is at least 2–4 hours of formal reserved training time every week covering the core specialty topics; the lectures will be in interactive, case-based discussion format. The program director and the fellow will work together to ensure the planning and implementation of academic activities. Topics are stratified into three categories of the learning domain: knowledge, skill, and attitude.

Top knowledge topics and procedures:

- Anatomy and neurophysiology of the urinary tract system.
- Neuropathology of the urinary tract system.
- Good urodynamic practice.
- Neurogenic bladder.
- Incontinence.
- Urinary retention and bladder outflow obstruction.
- Painful pelvic syndromes.
- Conservative management of lower urinary tract dysfunction.
- Intravesical botulinum toxin injection.
- Neuromodulation.
- Anti-incontinence procedures.
- Urinary bladder augmentation and urinary diversions.

Example of the academic half day (Table 2):

Academic week	Date	Time	Sessions	presenters	Supervisor
1	Jan 7	13:00–14:00	Welcome to the program	Program director	
		14:00–15:00	Case base study**	A	Mentor
2	Jan 14	13:00–14:00	Topic 1	B	Mentor
		14:00–15:00	Case base study	C	Mentor
3	Jan 21	13:00–14:00	Topic 2	D	Mentor
		14:00–15:00	Case base study	E	Mentor
4	Jan 28	13:00–14:00	Journal club*	F	Mentor
		14:00–15:00	Case base study	G	Mentor

B) Practice-based learning:

- Clinics:

The fellow will cover clinics during training independently, assessing, requesting investigations, establishing a management plan, and following the patients, all under consultant supervision.

- Daily rounds:

Fellows' roles are acting as consultants in leading the rounds, revising documentation and plans, and supervising and teaching junior staff. Rounds include bed-side teaching, all under consultant supervision.

- Operation:

The fellow will be carrying out surgeries independently under consultant supervision and supervising junior members of the team, dealing with complication of juniors.

- Simulations, conferences, and workshops:

Trainees are encouraged to attend scientific meetings and workshops related to the subspecialty. For example: Urodynamic and neuromodulation workshops and simulation courses like sacral neuromodulations, posterior tibial nerve

stimulations, and anti-incontinence surgery simulation courses. Saudi Urological Association annual meetings, Pan Arab Continence Society meetings, International continence society meetings, etc.

Trainees are expected to build their capacity based on self-directed learning. Each fellow has to have a logbook for all procedures supervised or performed independently.

The supervisor during practice will ensure that the fellow is competent and fulfilling the knowledge, attitude, and skill learning domains.

- Morning report:

It is mandatory for trainees to attend morning reports, where they will enhance their case presentation skills and handover strategies, discuss management, and make decisions.

Universal Topics:

Universal topics have been developed by SCFHS and are available, as e-learning via a personalized access to the online modules for each trainee. Each universal topic will have a self-assessment at the end of the module. As indicated in the Executive Policies of Continuous Assessment and Annual Promotion, universal topics are a mandatory component of the criteria for the annual promotion of trainees. Universal topics will be distributed over the whole period of training. There will be two online modules during the 2 years, 1 in the first year of training and 1 in the second year (Appendix A).

Training Year	Modules		Topic names	
	Number	Name	Number	Name
F1	Module 1	Introduction	Topic1	Safe drug prescribing
			Topic 2	Hospital-acquired infections
			Topic 3	Sepsis; SIRS; DIVC
			Topic 4	Antibiotic stewardship Blood transfusion
F2	Module 5	Acute Care	Topic 21	Pre-operative assessment
			Topic 22	Post-operative care
			Topic 23	Acute pain management
			Topic 24	Chronic pain management
			Topic 25	Management of fluid in the hospitalized patient
			Topic 26	Management of electrolyte imbalances

XI. ASSESSMENTS OF LEARNING

1. The purpose of assessment

Assessment plays a vital role in the success of postgraduate training. Assessment will guide trainees and trainers to achieve the targeted learning objectives. Conversely, reliable and valid assessment will provide excellent means for improving training, as it will inform the following aspects: curriculum development, teaching methods, and the quality of the learning environment. Assessment can serve the following purposes:

a**. Assessment for learning**: Trainers will use information from trainees' performance to inform them of the status of their learning for improvement as a form of feedback from the trainer to the trainee to improve their knowledge and skills.

b. **Assessment as learning**: Affords the trainee the opportunity of self-monitoring of their own progress, serves to inculcate fellows in the skills of lifelong learners.

c**. Assessment of learning:** Used to measure the outcome/achievement of the fellow's learning at the end of fellowship training.

d**. Feedback and evaluation**: Quality metrics that can improve the learning experience.

Assessment will be further classified into two main categories: Formative and Summative.

2. Formative Continuous Evaluation

2.1: General Rules:

Trainees, as adult learners, should strive for feedback throughout their journey of competency from "novice" to "mastery" levels. Formative

assessment (also referred to as continuous assessment) is the component of assessment that is distributed throughout the academic year, aimed primarily to provide trainees with effective feedback.

Input from the overall formative assessment tools will be utilized at the end of the year to make the decision to promoting each individual trainee. Formative assessment will be defined based on the recommendations of the Scientific Committee (usually updated and announced for each individual program at the start of the academic year).

According to the Executive Policy on Continuous Assessment (available online: www.scfhs.org), formative assessment will have the following features:

a. Multisource: minimum four tools.
b. Comprehensive: covering all learning domains (knowledge, skills, and attitude).
c. Relevant: focusing on workplace-based observations.
d. Competency-milestone-oriented: reflecting the trainee's expected competencies at the respective developmental level.

Trainees should play an active role in seeking feedback during their training. Conversely, trainers are expected to provide timely and formative assessment. SCFHS will provide an e-portfolio system to enhance the communication and analysis of data arising from formative assessment. The evaluations of fellow performance will be accessible for review by the fellow in accordance with institutional policy.

2.2: Formative Assessment Tools

Annual Continuous Evaluation Report (CER)

This report is prepared for each fellow at the end of each academic year by the program director to summarize the trainee's performance in the variable continuous assessment tools in order to make the annual promotion decisions.

The CER will be based on five evaluation components as per the latest SCFHS Policy on Promotion and Continuous Assessment (available on the SCFHS website). These components will cover the three main areas for continuous assessment as follows:

A) Knowledge

1. Academic Activities

A weekly protected academic activity should be arranged and moderated by the program director as a solo training site or in combination with a residency training activity. It should be at least a half-day activity weekly.

The cumulative average of weekly protected academic activity evaluations and participation in the monthly Journal Club will be incorporated in the final yearly CER.

2. Case-Based Discussion (CBD)

A case or two to be prepared by the fellow on a monthly basis for discussion of management, supervised by the training committee. It can be carried out physically or virtually.

The purpose of a case-based discussion (CBD) is to evaluate the level of professional judgment exercised in clinical cases by the fellow.

3. Annual Written Progress Test

To assess that the fellow has satisfactorily acquired the theoretical knowledge and clinical competences expected to be acquired during the relevant year.

A single examination is used for all levels (with adjustment of the passing score to reflect differences in the level of fellowship training). This examination consists of one questionnaire with 120 multiple-choice questions.

B) Skills:

1. Direct Observation of Procedural Skills (DOPS)

The Direct Observation of Procedural Skills, commonly referred to as DOPS, is a workplace-based assessment (WBA) tool.

The DOPS is a structured checklist for assessing competence in performing diagnostic and interventional procedures. It facilitates feedback in order to develop behaviors and performance related to operative, decision-making, communication, and teamwork skills. The assessment is formative, aimed at guiding further development of practice.

2. Research Progress Report

A monthly measurement of research project progress, the aim of this assessment tool is to augment the fellow's research skills and keep him/her familiar with and in adherence to the advances in the field and updated.

3. Log Book

Academic and clinical assignments should be documented on an annual basis using the logbook. Evaluations will be based on accomplishment of the minimum requirements of the procedures and clinical skills as determined by the program.

C) Attitude

ITERs (In-Training Evaluation Report)

To fulfill the CanMEDs competencies based on the end-of-rotation evaluation, the fellowship program committee will evaluate the fellow's performance by ITER.

ITER must be completed within two weeks following the end of each rotation (preferably in electronic format) and signed by at least one consultant.

The program director will discuss the evaluation with the fellow as necessary.

The evaluation form will be submitted within four weeks following the end of the rotations.

The evaluation of each component will be based on the following criteria

Percentage	< 50%	50–59.4%	60–69.4%	> 70%
Description	Clear fail	Borderline fail	Borderline pass	Clear pass

To achieve unconditional promotion, the candidate must score a minimum of "borderline pass" in all five components.

- The program director can still recommend the promotion of candidates if the above criteria are not met in certain situations:
- In case the candidate scored "borderline failure" in a maximum of one or two components, and these scores should not belong to the same area of assessment (for example: both borderline failures should not belong to skills)
- The candidate must have passed all other components and scored a minimum of clear pass in at least two components.

Please refer to the SCFHS Policy on Promotion and Continuous Assessment (refer to the SCFHS website).

3. Summative Assessment

3.1 General Principles

Summative assessment is the component of assessment that aims primarily to make informed decisions on trainees' competency. In comparison to the formative assessment, summative assessment does not aim to provide constructive feedback. For further details on this section please refer to the General Bylaws and Executive Policy of Assessment (available online: www.scfhs.org). In order to be eligible to take the final exams, a trainee should have been granted a "Certification of Training-Completion."

3.2. Final In-Training Evaluation Report (FITER)

In addition to approval of the completion of clinical requirements as indicated, for example, in the fellow logbook by the supervising committee, the FITER is also prepared by program directors for each fellow at the end of his or her final year in training.

This report shall be the basis for obtaining the certificate of Training Program Completion, and well as the qualification to take the Final Specialty Exams.

3.2 Certification of Training Completion

In order to be eligible to take the final specialty examinations, each trainee is required to obtain the Certification of Training Completion. Based on the Training Bylaws and Executive Policy (please refer to www.scfhs.org), trainees will be granted the Certification of Training Completion once the following criteria have been fulfilled:

a. Successful completion of all training rotations.
b. Completion of training requirements (e.g., logbook, research, others) as outlined in the FITER approved by the scientific committee of the respective specialty.
c. Clearance from SCFHS Training Affairs of compliance with tuitions payment and completion of universal topics.

The Certification of Training Completion will be issued and approved by the supervisory committee or its equivalent according to SCFHS policies.

3.3 Final Specialty Examinations

The final specialty examination is the summative assessment component that grant trainees the specialty's certification. It has two elements:

a. Final written exam: in order to be eligible for this exam, trainees are required to have been granted the Certification of Training Completion"
b. Final clinical/practical exam: Trainees will be required to pass the final written exam in order to be eligible to take the final clinical/practical exam.

XII. PROGRAM AND COURSE EVALUATION

SCFHS will apply variable measures to evaluate the implementation of this curriculum. Training outcomes of this program will be examined following the quality assurance framework endorsed by the Central Training Committee at SCFHS. Trainees' assessment (both formative and summative) results will be analyzed and mapped to curriculum content. Other indicators that will be incorporated are:

- Report of the annual trainees' satisfaction survey.
- Reports from trainees' evaluation of faculty members.
- Reports from trainees' evaluation of rotations.
- Reports from the annual survey of program directors.
- Data available from program accreditations.
- Reports from direct field communications with trainees and trainers.

Goal-Based Evaluation: the intended milestone achievement will be evaluated at the end of each stage to assess the progress of the curriculum delivery, and any deficiency will be addressed in the following stage during the time devoted to trainee-selected topics and professional session.

In addition to subject-matter opinions and best practices from benchmarked international programs, SCFHS will apply a robust method to ensure that this curriculum utilizes all the data available when this curriculum is revised in the future.

XIII. POLICIES AND PROCEDURES (PLEASE REFER TO THE SCHS POLICIES AND PROCEDURES FOR THE LATEST VERSION)

- Each trainee should renew his/her academic registration with the SCFHS at the commencement of each training year for the full duration of the program.
- Each trainee should have a valid professional registration throughout the training period.
- The trainee may not register with the SCFHS in more than one program at the same time.
- The trainee shall abide by the rules and regulations of the training program and examinations issued by the SCFHS, the decisions issued by the scientific councils or committees, the requirements of the specialty curriculum, and the regulations of the training center.
- The trainee is obliged to pay the fees required by the SCFHS on time.
- The trainee must be fully and continuously committed to completing the training for the duration of the program.
- During his/her enrollment in the program, the trainee is prohibited from working outside of the training centers accredited by the SCFHS for the Saudi Specialty/Fellowship Certificate Program.
- The trainee should inform the SCFHS if a change has occurred in his or her sponsor reference and provide a copy of his or her new sponsorship letter.

On-call duties:

- All fellows are required to complete a minimum of 7–10 on-call duty periods, each lasting 24 hours, per month as a junior attending or second on-call (attached to an on-call consultant).

XIV. APPENDICES

Appendix A: Universal Topics

First Year

Module: Introduction

- Safe drug prescribing
- Hospital-acquired infections
- Sepsis; SIRS; DIVC
- Antibiotic stewardship
- Blood transfusion

Safe drug prescribing: At the end of the Learning Unit, you should be able to:

a. Recognize importance of safe drug prescribing in healthcare
b. Describe the various adverse drug reactions with examples of commonly prescribed drugs that can cause such reactions
c. Apply principles of drug-drug interactions, drug-disease interactions, and drug-food interactions to common situations
d. Apply principles of prescribing drugs in special situations such as renal failure and liver failure
e. Apply principles of prescribing drugs in elderly, pediatric patents, and in pregnancy and lactation
f. Promote evidence-based cost-effective prescribing
g. Discuss the ethical and legal framework governing safe-drug prescribing in Saudi Arabia

Hospital Acquired Infections (HAI): At the end of the Learning Unit, you should be able to:

a. Discuss the epidemiology of HAI with special reference to HAI in Saudi Arabia
b. Recognize HAI as one of the major emerging threats in healthcare
c. Identify the common sources and set-ups of HAI
d. Describe the risk factors of common HAIs such as ventilator associated pneumonia, MRSA, CLABSI, and vancomycin resistant enterococcus (VRE)

e. Identify the role of healthcare workers in the prevention of HAI
f. Determine appropriate pharmacological (e.g., selected antibiotic) and non-pharmacological (e.g., removal of indwelling catheter) measures in the treatment of HAI
g. Propose a plan to prevent HAI in the workplace

Sepsis, SIRS, DIVC:

At the end of the Learning Unit, you should be able to

a. Explain the pathogenesis of sepsis, SIRS, and DIVC
b. Identify patient-related and non-patient-related predisposing factors of sepsis, SIRS, and DIVC
c. Recognize a patient at risk of developing sepsis, SIRS, and DIVC
d. Describe the complications of sepsis, SIRS, and DIVC
e. Apply the principles of management of patients with sepsis, SIRS, and DIVC
f. Describe the prognosis of sepsis, SIRS, and DIVC

Antibiotic Stewardship:

At the end of the Learning Unit, you should be able to:

a. Recognize antibiotic resistance as one of the most pressing public health threats globally
b. Describe the mechanism of antibiotic resistance
c. Determine the appropriate and inappropriate use of antibiotics
d. Develop a safe and proper antibiotic usage plan, including right indications, duration, types of antibiotic, and discontinuation.
e. Appraise the local guidelines for the prevention of antibiotic resistance

Blood Transfusion:

At the end of the Learning Unit, you should be able to:

a. Review the different components of blood products available for transfusion
b. Recognize the indications and contraindications of blood product transfusion
c. Discuss the benefits, risks, and alternative to transfusion
d. Undertake consent for specific blood product transfusion
e. Perform steps necessary for safe transfusion
f. Develop an understanding of special precautions and procedures necessary during massive transfusions

Recognize transfusion-associated reactions and provide immediate management.

Second Year

Module: Acute Care

- Pre-operative assessment
- Post-operative care
- Acute pain management
- Chronic pain management
- Management of fluid in the hospitalized patient
- Management of electrolyte imbalances

Pre-Operative Assessment: At the end of the Learning Unit, you should be able to:

a. Describe the basic principles of pre-operative assessment
b. Perform pre-operative assessment in the uncomplicated patient with special emphasis on
    i. General health assessment
    ii. Cardiorespiratory assessment
    iii. Medications and medical device assessment
    iv. Drug allergy
    v. Pain relief needs
c. Categorize patients according to risks

Post-Operative Care: At the end of the Learning Unit, you should be able to:

a. Devise a post-operative care plan including monitoring of vitals, pain management, fluid management, medications, and laboratory investigations
b. Hand-over the patients properly to appropriate facilities
c. Describe the process of post-operative recovery in a patient
d. Identify common post-operative complications
e. Monitor patients for possible post-operative complications
f. Institute immediate management for post-operative complications

Acute Pain Management: At the end of the Learning Unit, you should be able to:

a. Review the physiological basis of pain perception
b. Proactively identify patients who might be in acute pain
c. Assess a patient with acute pain
d. Apply various pharmacological and non-pharmacological modalities available for acute pain management

e. Provide adequate pain relief for uncomplicated patients with acute pain
f. Identify and refer patients with acute pain who can benefit from specialized pain services

Chronic Pain Management: At the end of the Learning Unit, you should be able to:

a. Review the bio-psychosocial and physiological basis of chronic pain perception
b. Discuss various pharmacological and non-pharmacological options available for chronic pain management
c. Provide adequate pain relief for uncomplicated patients with chronic pain
d. Identify and refer patients with chronic pain who can benefit from specialized pain services

Management of Fluid in Hospitalized Patients: At the end of the Learning Unit, you should be able to:

a. Review the physiological basis of water balance in the body
b. Assess a patient for his/her hydration status
c. Recognize a patient with over and under--hydration
d. Order fluid therapy (oral as well as intravenous) for a hospitalized patient
e. Monitor fluid status and response to therapy through history, physical examination, and selected laboratory investigations

Management of Acid-Base Electrolyte Imbalances: At the end of the Learning Unit, you should be able to:

a. Review the physiological basis of electrolyte and acid-base balance in the body
b. Identify diseases and conditions that are likely to cause or are associated with acid/base and electrolyte imbalances
c. Correct electrolyte and acid-base imbalances
d. Perform careful calculations, checks, and other safety measures while correcting acid-base and electrolyte imbalances
e. Monitor responses to therapy through history, physical examination and selected laboratory investigations

References:

1. Stewart WF, et al. Prevalence and burden of overactive bladder in the United States. World J Urol. 2003 May;20(6):327-336.
2. Irwin DE, Kopp ZS, Agatep B, Milsom I, Abrams P. Worldwide prevalence estimates of lower urinary tract symptoms, overactive bladder, urinary incontinence and bladder outlet obstruction. BJU Int. 2011 Oct;108(7):1132-1138.
3. doi: 10.1111/j.1464-410X.2010.09993.x. Epub 2011 Jan 13. PMID: 21231991.
4. Riyad Al Mousa, Sara Albagshi, Ali Alabbad, Hend Alshamsi, Osama Almuslim, Overactive bladder amongst Saudi women: Its prevalence, risk factors, and effect on quality of life. Arab J Urol. 2018;16(Suppl. 1):S4-S5.