

Kuwait Institute of Medical Specialization

Kuwait Board of Nephrology Nephrology Fellowship Curriculum

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Introduction and Goals

Goals

Educate and train fellows, so as to enable them to practice in the field of nephrology, recognizing its interference with related specialties such as diabetology, rheumatology, immunology, cardiology and internal medicine.

The fellow shall acquire request, knowledge, skills and attitude to enable them to practice with competence, compassion and professionalizes as specialist in nephrology. The fellow will work in learning environment, including problem solving while exercising evidence based critical judgment regarding the diagnosis and management of varies types of renal injuries and its complications.

The fellow will acquire the habit of self-learning to facilitate continuing lifelong professional development they shall also recognize the significance of applied basic science, chemistry and physics relevant to the practice of nephrology. Also to encourage the nephrology fellows to engage in the field of clinical research and evidence based medicine.

Learning objectives

The fellowship program is designed to provide education and training to enable the fellow in nephrology to meet stated core objectives. At the end of the fellowship training the fellow shall be able to:

- 1- Completely assess the patients seeking consultation in nephrology medicine by:
 - a. Obtaining good and relevant history
 - b. Performing a thorough physical examination
 - c. Order the appropriate tests both invasive and non invasive
 - d. Effectively interpret the clinical and laboratory tests result to reach a differential diagnosis.
 - e. Establish a strong knowledge on the appropriate therapy including medical, immunosuppressive and replacement of the falling kidney function by either dialysis or transplantation.
 - f. Full awareness of the potential therapy related side effects and complications.

- 2- Master the core nephrology topics including but not limited to:
 - a. Dialysis
 - b. Transplantation
 - c. Acid-Base, Fluid and electrolyte disorders
 - d. Hypertension
 - e. Glomerulonephritis
 - f. Acute renal failure
 - g. Chronic renal failure and End Stage Renal Disease
 - h. Diabetic nephropathy
 - i. Pregnancy related kidney diseases

- 3- Understand the complexity of certain cases with ESRD and the appropriate use Professional consultive management of these disorders in the sitting of multi disciplinary (medical/surgical/ Vascular /Critical care/ Social,...) approach.
- 4- Establishment a good doctor-patient relation-ship and the ability to manage families and patients on long term dialysis.
- 5- Develop a good approach to clinical appraisal scenarios.
- 6- Establish a good knowledge of the field of evidence base nephrology and to conduct clinical research.

Rotations

First Year Rotations

First year in nephrology consist of the following rotations

- 1- Two months General Nephrology
- 2- Two months of Hemodialysis
- 3- Two months of Peritoneal dialysis
- 4- Three months Consultation Nephrology
- 5- Two months of Real Transplantation
- 6- One month Pediatric Nephrology in Mubarak Hospital

In the first week of year one resident will have a condensed one week crash course for refreshing and orientation for the field of nephrology. This week include:

- 1- Exposure to Hemodialysis and the Hemodialysis unit
- 2- Exposure to the Peritoneal dialysis and the PD Clinic
- 3- Writing Dialysis Orders in the dialysis unit and in the ward
- 4- Arranging for Kidney biopsy (Investigations, Paperwork and equipment)

Out Patient Exposure

- 1- Year one resident should attend General Nephrology outpatient clinic at least on weekly.
- 2- He will be supervised for the clinic experience during this year.
- 3- During the Transplant Rotation the resident will join a nephrology specialist Clinic as per the transplant unit arrangement.

Second Year Rotations

The second year rotation includes the following rotations

- 1- Three months in general Nephrology
- 2- Three Months Consultation Nephrology
- 3- Two Months Hemodialysis
- 4- Two Month Peritoneal Dialysis
- 5- Two months Transplantation Nephrology

Outpatient clinic Exposure

Resident in their second year will sign a clinic in a given dialysis unit and he should start a longitudinal clinic with supervision of a senior nephrologist.

Responsibilities

Although the rotation structure is similar with the first year, a higher responsibility in terms of management and education is expected.

Third Year Rotations

In the third year rotation, more research space is given for the resident to finish his research project.

- 1- Three months In-Patient (General) Nephrology
- 2- Three months of Consultation Nephrology
- 3- Two months Hemodialysis
- 4- Two Months Peritoneal dialysis
- 5- Two months Research

Research Rotation

During this rotation the resident expected to attend all nephrology unit activities including morning rounds, journal clubs and ground round.

Responsibilities

A higher responsibility is expected both on clinical and administrative bases.

Out Patient clinic

Third year nephrology resident should continue the longitudinal clinic as in the second year. He should have more

freedom in the clinic and a supervision still required by a senior team member.

Rotations Details and Objectives

General Nephrology

Objectives

- Good Exposure to Pure nephrology patient and to those with Renal and other common morbidity (DM, CAD, CHF and HTN)
- Assessment and Management of Patient with Glomerular diseases
- Good Exposure to Renal Procedures:

Education

- Attending morning round
- Bed side teaching
- Structural In Rotation Sessions (See Appendix)
- Hospital Ground Round
- Journal Club
- Procedures (kidney biopsy and Dialysis catheter insertion)

Responsibility

- Nephrology Oncall
- Present one Journal club per month
- Present one Ground round per Rotation

Learning and Teaching Objective

- Approach to diagnosis and Treatment of Glomerular disease

- Diagnosis and Management of ARF
- Management of Life Threatening Complications of Renal Failure
- Management of Chronic Kidney Disease (CKD) and Its Complications
- Management of Patient with End Stage Renal Disease (ESRD)
- Management of Common Acid base and Electrolytes disorders

Reading Material

- Comprehensive Clinical Nephrology
- Primer of Kidney disease
- Handbook of Dialysis

Consultation Nephrology

Objectives

- Exposure to a patient with renal disease admitted with non renal issue
- Management of Renal impairment in Non Renal Patient
- Acute Renal Replacement Therapy
- Management of Life Threatening Electrolyte abnormalities

Responsibility

- Attend Nephrology Round
- Present one Journal club per rotation
- Present one journal club per rotation
- Attend

Education and Learning Objectives

- Pre Assigned Teaching Objectives for the Rotation (See Appendix)
- Attend Nephrology rounds
- Present one Journal Club per rotation
- Present one Nephrology Gound Round
- Prescribing and management of Continuous Renal Replacement Therapy (CRRT) complication
- Approach to a patient with severe acid base and electrolyte disorders
- Dialysis Management in Selected Patient population
 - o Surgical Patient
 - o Patient with cerebrovascular diseases

- Patient with Acute coronary syndrome
- Approach to In Hospital ARF
- Approach and Management of Hyponatremia and Hypernatremia in medical and surgical patient
- Approach to Glomerular disorders

Reading Materials

- Comprehensive Clinical Nephrology
- Handbook of Hemodialysis

Renal Transplantation

Objectives

- Good Exposure to the post Transplant Patient (acute and chronic)
- Understand, diagnose and treatment of Postransplant complications
- Understand the Mechanism and side effects of the common immunosuppressive medications
- Exposure to Kidney transplant Recipient workup
- Exposure to Kidney Transplant donor Workup
- Exposure and Management of patients with falling renal allograft

Responsibility

- Attending morning rounds
- Present one journal club per rotation
- Present one Ground Round Per Rotation
- Attend one Transplant clinic per week (as assigned)
- Attending Transplant Oncall as per schaduale of the organ transplant center

Learning Objectives and Education

- Approach to Transplant Immunology and to the common immunolical tests in the Donor reciepiant assessment for kidney transplantation
- Management of transplant patient in the firast 24-72 hrs and understand the approach of Acute post Transplant renal impairments

- Role of Biological induction Therapy in Life related and cadaveric Renal Transplantation
- Approach and management of renal impairment after the first month post transplantation
- Risk of original disease recurrence post transplantation
- Approach to common viral illnesses post transplantation
 - BKV
 - CMV
 - EBV
- Approach to the common post transplant infections
- Approach to Malignancy risk and to post Transplantation lymphoproliferative disorders (PTLD)

Reading Materials

- Comprehensive clinical nephrology
- Handbook of Renal Transplantation

Hemodialysis Rotation

Objectives

- Management of Patients with ESRD on Hemodialysis
- Understand the common medical problems in patients with ESRD on Hemodialysis.
- Medication and Antibiotic usage and dose adjustment for patients on hemodialysis
- Get a good grasp of various aspects in hemodialysis prescription for individual patients.
- Approach to the diagnosis and management of acute and chronic dialysis related complications.
- Caring of patient with ESRD
 - Access
 - Cardiovascular
 - Malignancy screening
 - Transplantation Assessment

Responsibility

- Daily responsibility in Taking care of patients in the Dialysis ward
- Daily round in the dialysis unit with Dialysis staff
- Attending Nephrology morning meeting (daily)
- Presenting one journal club per rotation
- Presenting one Ground Round per rotation
- Attend nephrology oncall as per nephrology unit

Learning Objectives and Education

- KDOQI Dialysis related guidelines
- Mechanism of Dialysis and Hemofiltration
- Access monitoring and Access re-circulation
- Evidence based dialysis adequacy

Reading Recommendations

- Handbook of Dialysis
- KDOQI Guidelines
- Principles and Practice of Dialysis , William Henrich

Peritoneal Dialysis

Objectives

- Exposure to ESRD patient treated with Peritoneal dialysis
- Management of Peritoneal dialysis
 - Initiation
 - Prescription
 - CAPD vs Intermittent Peritoneal dialysis
 - Type of Dialysate fluid
 - Test of Adequacy
- Diagnosis and management of Peritoneal dialysis related complication
- Adequacy in Peritoneal dialysis

Responsibility

- Daily responsibility in Taking care of patients in the Peritoneal Dialysis Clinic.
- Once / Twice weekly PD Round as per
- Attending Nephrology morning meeting (daily)
- Presenting one journal club per rotation
- Presenting one Ground Round per rotation
- Attend nephrology oncall as per nephrology unit

Learning Objectives and Education

- Indications and contraindications of Peritoneal dialysis

- Use of Kt/V and measurement of adequacy in Peritoneal dialysis
- Major Studies in Peritoneal Dialysis
- Non Dialysis Related Complications in PD Patients
- Dialysis Related complication in PD Patients

Reading Recommendations

- Handbook of Dialysis
- KDOQI guidelines for Peritoneal Dialysis
- KDOQI guidelines for CKD
- Comprehensive Clinical Nephrology

Pediatric nephrology

Nephrology Unit in Mubarak hospital

Nephrology unit in Mubarak hospital is the main unit in Kuwait taking care of pediatric nephrology patients. The patient care is divided into:

- **Inpatient Team** : taking care of admitted patients in general wards and PICU as well as inpatient consultations.
- **Outpatient Team:** taking care of clinics held on Sunday and Wednesday. They also take care of walk-in patients outside the clinics.
- **ESRD team:** taking care of patients on hemodialysis and peritoneal dialysis.

Pediatric Nephrology weekly schedule

Time	Sunday	Monday	Tuesday	Wednesday	Thursday
8:30 -9:30 AM	Nephrology Clinic Dr. Aisha Alterkait	Patient discussio n	Topic Presentatio n	Nephrology Clinic Dr. Faisal Alkandari	
9:30 - 11:30 AM		In Patient Rounds	In Patient Rounds		ESRD Rounds
12: 30 PM		Clinical Meeting	Trainee Sessions	Subspecialt y Presentatio n	Problem Rounds

Objectives of Pediatric Nephrology Rotation

A. PATIENT CARE

Objective 1: Demonstrate clinical skills of comprehensive medical interview, history and physical examination, including functional assessment and renal status as needed.

Objective 2: Make informed recommendations regarding preventive, diagnostic, and therapeutic options and interventions based on clinical judgement, scientific evidence, and patient preference.

B. MEDICAL KNOWLEDGE

Objective 1: Demonstrate knowledge of the natural history, pathophysiology, clinical presentation, diagnosis through differential diagnosis and management of clinical problems as listed.

- Acute Renal Failure
 - Differential diagnosis (Renal, prerenal and Post renal)
 - Potential reversible etiologies
- Renal Biopsy
 - Indication for renal biopsy in pediatric patients
 - Review of renal pathology of various diseases
- Fluid Electrolyte and Acid-Based Disorders
 - Hyperkalemia/Hypokalemia
 - Hyponatremia/Hypernatremia
 - Hypocalcemia/Hypercalcemia
 - Hypomagnesemia/Hpermagnesemia

- Hyperphosphatemia/Hypophosphatemia
- Hyperuricemia
- Varied acid-based disturbances
- Fluid overload
- Nutrition
 - Dietary management in pediatric kidney diseases
- Dialysis
 - Basics of hemodialysis
 - Basics of peritoneal dialysis
- Nephrotic Syndrome
 - Ambulatory care
 - Diagnosis
 - Management
 - Diet
 - Diuretics
 - Steroids
 - Cytotoxic agents
 - Education and counseling
 - Renal pathology
 - Inpatient management of anasarca
- Chronic Renal Failure
 - Diagnosis
 - Management
 - Education
 - Preparation for dialysis and transplantation
- Hypertension
 - Ambulatory

- Differential diagnosis
 - Diet
 - Drug therapy
 - Monitoring
 - Management of hypertensive encephalopathy
- Renal Stone Disease
 - Diagnosis
 - Management
 - Acute Fluid Electrolyte and Acid-Based Disorders
 - Diagnosis
 - Management
 - Pharmacology in pediatric nephrology
 - Pharmacologic Agents and Renal Failure
 - Common Immunosuppressive medications used in pediatric nephrology
 - Urinary Tract Infections
 - Diagnosis
 - Management
 - Major Urinary Tract Malformation (VUR, PUV, PUJ, Duplex kidneys ...etc)
 - Approach to a patient with hematuria
 - Approach to a patient with proteinuria
 - Hereditary diseases (Bartter syndrome , cystinosis, etc)

C. PRACTICE-BASED LEARNING AND IMPROVEMENT

Objective 1: Demonstrate evidenced based practice through appraisal and assimilation of scientific information, e.g. scientific journals, related to patient care

Objective 2: Demonstrate ability in medical decision making, which incorporates medical assessment and patient values and preferences.

D. INTERPERSONAL AND COMMUNICATION SKILLS

Objective 1: Create an atmosphere of positive regard for the patient and family to promote the best medical outcome through accessibility, affability and continuity.

Objective 2: Incorporate psychosocial and ethical concerns of the patient and family in the development of the care management plan.

E. PROFESSIONALISM

Objective 1: Recognize the legal requirements of advanced directives and describe the process of assessing a patient's advance directives, including the patient's perspective.

Objective 2: Model appropriate professional attitudes and behaviors of time management and punctuality, reliability, and ethical behavior.

F. SYSTEM-BASED PRACTICE

Objective 1: Recognize financial issues of health care, with emphasis on understanding acute and chronic care, and medication coverage.

Out Patients Clinics

Out patient clinic is embedded in the rotations and start from the first year. Its mandatory that all nephrology resident to attend outpatient clinic and they should be under supervision by a senior member in the rotating nephrology unit.

In the first year, nephrology resident will be attending clinics in the medical facility in which they are rotating. Second and third year residents will be assigned a separate clinic in one of the nephrology facility where they can have there weekly outpatient clinic with a supervising senior nephrology staff.

Patient list will be signed after being discussed with clinic supervisor on a weekly bases and it will be added to the resident log book.

Evaluation

1- Candidate Evaluation

- a. Resident will be evaluated monthly during each given rotation.
- b. Site coordinator will sit and review the resident performance with the resident.
- c. Both the site coordinator and the resident will sign the review.
- d. If the resident performance is unsatisfactory, he will repeat that particular rotation.

2- Tutor evaluation

- a- Residents will evaluate the clinical tutor in each given rotation and
- b- These evaluations will be submitted to the site coordinator and then to the nephrology board committee.

3- Rotation Evaluation

- a- at the end of each rotation, residents will evaluate the rotation in varies aspects including :
 - a. Teaching
 - b. Organization

- c. Work exposure
- d. Evaluations will be signed and send to the program director directly.

4- Teaching Evaluation

- a- In site teaching evaluation
- b- Academic half day evaluation

Log Book

A Logbook will be assigned to every nephrology resident. It should be filled by the resident and signed by the tutor who is supervising the task or procedure.

Activities that need to be reported in the logbook include:

1- Procedures

- a- Renal Biopsy
- b- Dialysis Catheter insertion
- c- Transplant Kidney Biopsy

2- Presentations

- a- Ground Round
- b- Journal Club
- c- Nephrology for Internal Medicine round (second and third year resident)
 - i. Morning round
 - ii. Ground round
- d- Morning Round presentation and Organization (Third Year Residents)

3- Outpatient clinics experience

Academic Half Day

Academic half day will be held on weekly bases. It will include basic science, clinical cases and recent and major studies related to the field of nephrology.

Attendance to the academic half day is mandatory and an attendance sheet will be distributed. Resident attence will be taken in consideration in the yearly evaluation.

Topics to be included but not limited to:

- 1- Acid base and electrolyte disorders
- 2- Hemodialysis
- 3- Peritoneal dialysis
- 4- Idiopathic and secondary glomerulonephritis
- 5- Renal transplantation
- 6- Diabetic nephropathy
- 7- Hypertension
- 8- Pregnancy related renal diseases
- 9- Pediatric nephrology
- 10- Kidney Stones
- 11- Major urological topics for nephrologist
- 12- Journal club of major and recent nephrology studies

Research

Clinical research is an important aspect of modern clinical practice and to the field of nephrology. Residents will be assigned a research adviser at the beginning of the first year. It's the resident responsibility to finish the paper work and ethic committee requirement prior to start the clinical project.

The resident should finish the clinical project before the end of the third clinical year of the program. The research will be evaluated on a regular bases with research adviser. Research progress will be reviewed during the resident yearly evaluation.

Examinations

At the end of the third academic year, nephrology residents will sit for a final written examination. The examination will consist of a mini essays, short explanations, clinical scenarios and listing questions. A mini mock examination will be arranged for the resident on a yearly basis. A 70% pass mark is mandatory and failed resident have to repeat the final examination.

Examples of the questions include but not limited to:

- 1- List the side effects of the drug X
- 2- List 5 causes of In-patients hyponatremia in frequency orders
- 3- Explain the mechanism of action of the drug X
- 4- A patient presented with renal impairment and with following lab data (will be given to the resident) and he will be asked about: Next investigation step: most likely differential diagnosis in likelihood order and patient management.
- 5- Explain and comment on the finding of a particular clinical study
- 6- Write a mini essay on renal handling of a given element in the body
- 7- A patient presented with renal and urinary abnormality and both laboratory and renal biopsy result will be given to the resident, and he have to reach the diagnosis, mode of treatment and natural history of the disease.

Nephrology Site Coordinators

Site	Name	Fax	Telephone	Email
Al-Adan	Dr Emad Abdulla	23967012	23967017	emadalimoh@yahoo.com
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