

**University of Michigan  
Internal Medicine Residency**

**Nephrology Rotation Curriculum: Outpatient Nephrology Elective**

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**Rotation Goals and Educational Purpose**

Nephrology practice in the ambulatory setting addresses a set of medical problems that are quite different from those seen in the inpatient setting. This practice requires an understanding of renal physiology, its derangements in kidney disease, the manifestations of the disease clinically and appropriate outpatient workup. It also requires a working knowledge of the various therapeutic agents used in these disorders as well as an understanding of the unique handling of these agents by the body in the altered homeostatic milieu of chronic kidney disease.

The general internist should be able to provide appropriate diagnostic and therapeutic care for common kidney diseases. In addition, the internist should be able to recognize the features of kidney disease that demand a more elaborate work up and/or specialized therapy.

This 2-week rotation is intended for residents at all levels.

**Rotation Competency Objectives**

The following provide an overview of the knowledge, skills, and behaviors promoted in this rotation.

- I. Patient Care and Medical Knowledge- Upon completion of this rotation, residents will demonstrate
  - a. Knowledge of the pathophysiology, clinical presentations, laboratory and radiological diagnosis and therapeutic modalities for treatment of parenchymal kidney disease and chronic fluid and electrolyte disorders in the outpatient setting. Including the following common conditions:
    - Diabetic Nephropathy
    - Primary and secondary glomerulonephritis
    - Chronic tubulointerstitial disease
    - Secondary hypertension
    - Electrolyte disorders
    - Lupus Nephritis
    - Nephrolithiasis
    - Assesment and evaluation of dialysis vascular access
    - Management of a kidney transplant recipient
    - Management of patients on hemodialysis and peritoneal dialysis
  - b. They will also gain understanding of the various renal replacement therapy options for the care of the end stage renal disease population.

- c. History taking and physical exam skills including a renal focused history and physical exam including recognition of uremic symptoms and signs, assessment of volume status, and identification of systemic complaints associated with renal pathology.
- d. Appropriate ordering and interpretation of of urinalysis. Basic understanding of dialysis prescriptions and procedures. Basic understanding of the assessment and placement of various forms of dialysis access.
- II. Interpersonal and Communication Skills:
  - a. Residents will recognize the importance of patient education in renal dietary and drug compliance, as well as in ESRD decision-making.
  - b. Demonstrate communication skills that support respectful patient-centered care.
  - c. Generate written documentation consistent with a hypothesis-generating approach to common renal conditions. Complete dictations in a timely manner, using common documentation standards.
- III. Professionalism: Throughout the rotation residents will:
  - a. Respectfully and compassionately respond to patients with a multitude of renal disorders.
  - b. Compassionately respond to socio-behavioral and psychiatric complexities of common renal conditions including the unique aspects of care for hemodialysis and post-transplant patients.
- IV. Practice-Based Learning and Improvement:
  - a. Demonstrate willingness to learn from error, use it to support self education and facilitate the learning of others
- V. Systems-Based Practices:
  - a. Residents will participate in various quality improvement project meetings in the outpatient dialysis setting and learn the dynamics of advancing patient care.
  - b. Residents will learn the importance of interdisciplinary patient care through interactions with members of the dialysis and transplant team including nurses, social work, and dieticians.
- c. Strive to provide cost-effective care incorporating awareness of available ancillary services.

### **Teaching Methods**

1. Supervised patient care: The emphasis of the rotation is on experiential learning through management of outpatients with renal disease. A variety of outpatient faculty supervised patient care activities will be provided in this rotation. Residents will be encouraged to have initial patient interactions to allow for independent development of clinical assessments and care plans. Cases will then be presented to faculty supervisors at which time the supervising physicians will work with the resident to finalize care plans. Residents are under the full supervision of a faculty nephrologist in each outpatient venue.
2. Structured Didactics and Small Group Learning- Residents are expected to attend each of the following unless in conflict with their personal continuity clinic.
  - a. Fellows Curriculum Lecture 12noon – 1pm Tuesdays (Taubman Center - lunch provided)
  - b. Nephrology Combined Conference 4pm to 6pm Wednesday (University Hospital)
3. Independent Study (including core reading and other education resources)
  - a. **Textbooks and Manuals:**

1. Primer on Kidney Diseases 5<sup>th</sup> Edition; National Kidney Foundation. Greenberg, et al. 2009.
2. Clinical Physiology of Acid-Base and Electrolyte Disorders 5<sup>th</sup> Edition. Burton Rose. 2000.
3. Handbook of Dialysis, 4<sup>th</sup> Edition. John Daugirdas. 2006.
4. Handbook of Kidney Transplantation, 5<sup>th</sup> Edition. Gabriel Danovitch. 2004.
5. Comprehensive Clinical Nephrology, 4<sup>th</sup> Edition. Feehally and Johnson. 2010.

**b. Core Clinical Journals**

1. Clinical Journal of American Society of Nephrology (CJASN)
2. Nature Nephrology Review
3. Kidney International
4. American Journal of Kidney Diseases (AJKD)

**c. Professional Society Guidelines and Online Learning Resources on the web:**

1. American Society of Nephrology Website: <http://www.asn-online.org/>
2. European Dialysis and Transplant Association: <http://www.ndt-educational.org/issue201.htm>
3. High Blood Pressure University (Michigan): [http://www.michigan.gov/mdch/0,1607,7-132-2940\\_2955\\_2959\\_55706---,00.html](http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_2959_55706---,00.html)
4. Nephrology Rounds (Brigham and Women's Hospital Nephrology Division): <http://www.nephrologyrounds.org/cgi-bin/templates/body/accueil.cfm>
5. International Society of Nephrology: <http://www.isn-online.org/isn/index.html>
6. National Kidney Foundation (KDOQI Guidelines): <http://www.kidney.org/professionals/kdoqi/guidelines.cfm>
7. Renal Fellow Network: <http://renalfellow.blogspot.com/>

**Evaluation Methods**

Formative face-to-face feedback to residents by attendings is encouraged at mid-rotation. Each rotation period (2 weeks) attendings complete online competency-based evaluations of each resident. The evaluation is shared with the resident, is available for on-line review by the resident and is sent to the residency program office for review. The evaluation is part of the of the resident file and is incorporated into semiannual performance reviews for the directed resident feedback.

Residents complete a service evaluation of the rotation faculty monthly.

**Rotation Structure**

**First Day Protocol:** Contact Dr. Panduranga Rao (see below) at least 2 weeks prior to the start of the rotation to confirm your continuity clinic date/time and to confirm your specific rotation schedule.

**Administrative Lead:** Dr. Panduranga Rao - e mail: [spandu@umich.edu](mailto:spandu@umich.edu); phone 734-615-3994 page 14727

**Continuity Clinic:** General Medicine continuity clinic continues, ½ day weekly

**Weekend Duty:** None

**Call duty:** None specific to the rotation; Weekend night duty as assigned by the program may occur.

**SAMPLE SCHEDULE:**

This rotation includes a variety of outpatient clinics and learning opportunities focused on the care of the renal patients. Residents will be exposed to pre- and post-transplant care, various dialysis modalities, general and specialty nephrology clinics including lupus, nephrolithiasis, and interventional nephrology

**Rotation schedule**

*\*Exact schedule can vary; please contact Dr. Rao prior to the rotation to confirm*

	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>8AM-12PM</b>	Transplant Clinic (TC) <i>(Norman/Luan)</i>	Hemodialysis Clinic (South Industrial Unit) <i>(Segal)</i>  <i>12pm-1pm Nephrology Fellows Curriculum Lecture (TC) (lunch provided)</i>	General Nephrology Clinic (TC-Area C) <i>(Heung/Gipson)</i>	Week #1: Lupus Clinic (TC-Area A) <i>(Rao)</i>  Week #2: Intervention Nephrology (UH-7D) <i>(Leavitt/Slocum)</i>  Week #3: Stone Clinic (TC-Area C) <i>(Patel)</i>  Week #4: Intervention Nephrology (UH-7D) <i>(Leavitt/Slocum)</i>	Nephrology Clinic (TC- Area C) <i>(Segal/ Patel)</i>
<b>1PM-5PM</b>	General Nephrology Clinic (TC-Area C) <i>(Garg)</i>	General Nephrology Clinic (TC-Area C) <i>(Brosius/Rao)</i>	Peritoneal Dialysis (South Industrial) <i>(Messana)</i>  <i>4pm-6pm Nephrology Combined Conference (UH)</i>	Intervention Nephrology (UH-7D) <i>(Leavitt/Slocum)</i>	Self Study