

NEPHROLOGY CURRICULUM

The renal service includes the inpatient and outpatient management of patients with various stages of kidney disease including dialysis and renal transplantation, electrolyte disorders, acid/base disorders, and nephrolithiasis. The service also provides consultative service to University Hospital, Crouse Hospital, and the VA Hospital. The nephrology division includes the following individuals:

Sri Narsipur, MD –Division Chief
Vikram Aggarwal, MD
Sylvia Betcher, PhD, MD
William C. Elliott, MD
Rose Giammarco, MD
Kimberly Gilbert, MD
Apurv Khanna, MD – Fellowship Director
Stephen Knohl, MD – Residency Program Director for Department of Medicine
John Todd Leggat, MD

I. Educational Purpose

The general internist should be competent to evaluate and appropriately refer patients with glomerular disorders, asymptomatic urine abnormalities, tubulointerstitial diseases, renal vascular disease, renal failure, nephrolithiasis, tubular defects, and infections and neoplasms of the kidneys, bladder, and urethra, and should also be able to provide principle treatment for some of these conditions. He or she should be able to estimate the level of kidney function in a given individual and to manage fluid, electrolyte, and acid-base disorders; understand the ways in which systemic diseases may affect the kidneys; and recognize the potential nephrotoxicity of various therapeutic and diagnostic agents. The general internist must also be familiar with guidelines for pre-dialysis management of patients with kidney disease and be able to recognize indications for dialysis and for referral to a nephrologist.

II. Learning Venue

Outpatient Description- Based at University Health Care Center, University Hospital Transplant services and Veterans Administration Hospital

Inpatient Description - The consult nephrology services are hospital-based services that include University Hospital, Crouse Hospital, and the VA Hospital. These locations will allow the housestaff officer to see medical and surgical patients ages 16 and older, of male and female gender, and of varying ethnicities/cultures.

Expectations of the resident: The intern will complete detailed consultation history and physicals of referred patients and complete a progress note on a daily basis. He or she will follow an average of three patients. The intern will be expected to examine the urine (via dipstick and microscopically) during the initial evaluation or as needed as well as interpret basic laboratory and radiographic tests of renal function. Interns will also be expected to teach the medical students on the service as well as further his/her own learning through the use of reading materials that are outlined below.

Expectations of the Senior Resident: Same as intern expectations, plus the senior resident will follow up to 6 patients. The senior resident should master the basic laboratory and radiographic evaluation of renal function as well as fulfill teaching responsibilities to the intern and medical students. The senior resident will continue to expand his or her knowledge of renal disease with the aid of the reading materials outlined below.

Expectations of Fellow: The first year fellow will supervise the interns, residents, and medical students on the consult services. The first year fellow is expected to know about **all** patients on his own service. He

is expected to place dialysis orders, including hemodialysis, peritoneal dialysis, and continuous renal replacement orders. He is expected to review the presentations of the students and residents on the service, prior to presentation to the attending physician. He is expected to triage patients in order of necessity for dialysis. He is expected to write outpatient dialysis orders when patients are discharged.

Teaching Methods:

1. Daily Attending Rounds

Here the entire team (students, housestaff, fellow, and attending) will discuss patient issues and formulate daily plans. The housestaff will be expected to have seen each of their assigned patients, collected all relevant data, and present in a concise, logical format to the attending. Rounds typically begin in the ICU for Consult B. Rounds will occur on the floors for Consult A and will vary depending on patient load and severity of disease.

Teaching Rounds

Here the attending will lead the team in various exercises to expand their knowledge of nephrology. Various formats, including bedside teaching, didactic sessions, focused presentations, and review of biopsy and urine specimens will often be incorporated during work rounds.

Bedside Rounds

Here the attending will supervise and guide the fellow, housestaff, and students in regards to proper history and physical exam techniques. These rounds are often integrated into teaching rounds.

2. Recommended Reading:

-Therapy in Nephrology and Hypertension: A Companion to Brenner and Rector's "The Kidney" edited by Hugh Brady and Christopher Wilcox

-Fluids and Electrolytes edited by Juha P. Hokko, Richard L. Tannen

-The Principles and Practice of Nephrology edited by Harry Jacobson, Gary E. Striker, Saulo Klahr

-Primer in Kidney Diseases

-Massry & Glassock's Textbook of Nephrology edited by Shaul G. Massry, Richard J. Glassock

-The Kidney by Brenner and Rector

-Replacement of Renal Function by Dialysis edited by C. Jacobs...[et al.]

-Dialysis Therapy edited by A. Nessenson and R. Fine

-Principles and Practice of Dialysis edited by William L. Henrich

-Primer on Transplantation edited by D. Norman and L. Turka

-Clinical Physiology of Acid-Base and Electrolyte Disorders by B.D. Rose

-Pathophysiology of Renal Disease by B.D. Rose

-The Kidney: Physiology and Pathophysiology edited by D. Seldin and G. Giebisch

-Handbook of Dialysis edited by J. Daugirdas and T. Ing

-Handbook of Kidney Transplantation edited by G. Danovitch

-Up-To-Date Online

3. Unique Learning Opportunities:

Renal Conference (Tuesdays from 4-5PM) – didactic sessions covering all aspects of nephrology provided by the attending and fellows from adult and pediatric nephrology, transplantation, and nephropathology.

Journal Club/Physiology Conference (Wednesdays from 4-5 PM) – critical evaluation of articles relevant to nephrology. Once a month, the fellow will present a topic on renal physiology.

Case Conference (Thursdays from 12-1PM) – the fellows and residents present renal cases to the division for informal discussion and practical management issues.

Dialysis and Transplantation Committee Meeting (Fridays 8:30 -9AM) – discussion of currently hospitalized patients with end-stage renal disease or dialysis-requiring acute renal failure as well as any relevant transplant issues.

III. Mix of Diseases and Patient Characteristics

1. Common Clinical Presentations and Diseases:

Outpatient:

1. Evaluation and interpretation of urinalysis
2. Estimation of proteinuria and its implications
3. Recognition of primary glomerular disorders
4. Management of diabetic nephropathy
5. Understanding the manifestation of chronic kidney disease and its management
6. Management of renal disease associated hypertension
7. Management of the renal transplant recipient

Inpatient:

Urine Abnormalities

Bladder Outlet Disease

Dysuria

Edema

Suprapubic/Flank Pain

Changes in Urinary Habits

Hematuria

Hypertension

Incontinence

Uremia

Renal Mass or Bruit

Acute Renal Failure

Chronic Kidney Disease

Nephrotic Syndrome

Glomerulonephritis

Electrolyte Dyscrasias (Hypernatremia, Hyponatremia, Hyperkalemia, Hypokalemia, Hypercalcemia, Hypocalcemia, Hypomagnesemia, Hyperphosphatemia, Hypophosphatemia)

Acid-Base Disorders

Renal Transplantation

Nephrolithiasis

2. Procedures:

Calculation of Creatinine Clearance

Calculation of Fractional Excretion of Sodium

Calculation of transtubular potassium gradient

Calculation of replacement fluids and electrolytes

Dipstick of Urine

Microscopic Analysis of Urine

Femoral Placement of Temporary Dialysis Access (optional)

Educational Content

Acid-base disorders
<i>Acute renal failure</i>
Acute (ischemic) tubular necrosis
Atheroembolic
Drug-induced (radiocontrast, analgesics, etc.)
Interstitial
<i>Chronic renal failure</i>
Conservative management (before dialysis)
Hemodialysis
Peritoneal dialysis
Transplantation
Fluid and electrolyte disorders
<i>Glomerular diseases</i>
Acute glomerulonephritis
Chronic glomerulonephritis
Nephrotic syndrome
<i>Hypertension (see also Cardiology)</i>
Hypertensive crisis
Secondary hypertension
<i>Inherited diseases</i>
Polycystic kidneys
<i>Kidney disease in systemic illness</i>
Diabetes mellitus
Hypertension
Other systemic diseases
<i>Neoplasia (see also Oncology)</i>
Bladder carcinoma
Renal cell carcinoma
<i>Nephrolithiasis</i>
Diagnosis of renal stone disease
Management of acute renal colic
Obstructive uropathy
Renal disease in pregnancy (see Medical Consultation)
<i>Urinary tract infection</i>
Cystitis
Pyelonephritis
<i>Urologic disorders</i>
Bladder outlet obstruction
Cancer of the prostate (detection)
Erectile dysfunction
Incontinence
Prostate disease

IV. Method of Evaluation

Evaluations are based on the six core competencies. Interim evaluations will be provided to each member of the team. All team members are expected to complete formal evaluations at the end of each rotation using the web-based MedHub evaluation software.

V. Rotation Specific Competency Objectives

Patient care – generic link to competency document

Medical knowledge – generic link to competency document

Professionalism – Frequent discussions relevant to end of life care and discontinuation of dialysis are relevant to the care of end stage renal patients and will be evaluated. - Generic link to competency document

Interpersonal and Communication skills – Consult services are by nature rotations that test a resident's 'people' skills. When you are asked to consult on a patient, the many members of the 'Team' asking for help have varying attitudes about how much they value your opinion. Your performance on how well you do this is reflected by 1) the clarity of your consult summary of the case 2) the clarity of your consultative advice 3) the communication of that information to the "team" that has asked for your help. The evaluations in the daily notes should be diagnosis-based and start with the reason for the primary team asked for a consultation. Disagreements are inevitable and learning how to respond and react to this is one of the learning values of consultative medicine.

Practice Based Learning – generic link to competency document

Systems Based Practice – This rotation offers a unique opportunity to work in a cross specialty environment including ICU, transplant, surgical and psychiatric hospitalized services. In addition some patients will have long-term dialysis needs that need to be understood and coordinated by the consult team.

Review of the ACGME Duty Hours

ACGME Rules Regarding Duty Hours

The Work Day

No shift can be longer than 24 hours.

An additional 3 hours can be utilized to finish work that does not relate to direct patient care.

There must be 10 hours off between shifts during the Work Week

No work week (Sunday through Saturday) can exceed 80 hours under any circumstance.

Moonlighting (for fellows and chief residents) counts toward the 80 hours.

There must be a continuous 24 hours off per week.

Reviewed and Revised by: Apurv Khanna, MD

Date Revised: 05/20/2016