

## **GOALS AND OBJECTIVES FOR NEPHROLOGY**

### **Nephrology**

#### Overview:

Nephrology involves disease of the kidneys, its contiguous collecting system, and its vasculature. The kidneys play a key role in fluid, electrolyte, and acid-base regulation and are affected by a wide range of systemic disorders, drugs, and toxins.

The general internist should be competent to evaluate, treat and appropriately refer patients with glomerular disorders, asymptomatic urine abnormalities, tubulo-interstitial diseases, renal vascular disease, renal failure, nephrolithiasis, tubular defects, renal infections, and neoplasms affecting the urinary structures. He or she should be able 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 renal failure and be able to recognize indications for dialysis.

The range of competencies in managing renal disease will depend on the availability of a nephrologist to the primary care internist. Although all general internists should know the indications for dialysis, in some cases (e.g., if a nephrologist is not available) the general internist may be responsible for initiating and maintaining patients on peritoneal dialysis. In most situations, hemodialysis and peritoneal dialysis are the responsibility of the nephrologist, as well as renal biopsies and nephrostomy tube placement.

### **Clinical Training and Education in Nephrology**

The training of the residents in nephrology is accomplished through direct management of the patients in the inpatient and outpatient setting under faculty supervision and through a core lecture series, Renal Grand Rounds, Journal Club, and case presentation conferences.

#### Common Clinical Presentations:

- Abnormalities noted on urinalysis (including proteinuria, hematuria, bacteriuria, pyuria, and cylinduria)
- Complaints referable to bladder outlet (urgency, hesitancy)
- Dysuria
- Edema
- Flank or suprapubic pain or tenderness
- Frequency and complaints referable to increased or decreased urine volume
- Hematuria (gross)
- Hypertension
- Incontinence
- Presenting features of uremia
- Renal colic
- Renal mass or bruit
- Family history of kidney disease

## ORGAN AND SYSTEM COMPETENCIES IN INTERNAL MEDICINE

### Clinical Training and Education in Nephrology (Cont'd):

#### Procedure Skills:

- Urinary dipstick test and urinary sediment
- Calculation of creatinine clearance
- Calculation of fractional excretion of sodium
- Peritoneal cavity aspiration per indwelling dialysis catheter (optional)
- Femoral temporary hemodialysis catheter placement (optional)
- Peritoneal dialysis catheterization (optional)
- Suprapubic bladder catheterization (optional)

#### Ordering and Understanding Tests:

- 24-hour urine excretion of calcium, oxalate, citrate, uric acid, and protein
- Computed tomography, magnetic resonance imaging, and angiography and ultrasound of the kidneys
- Creatinine clearance
- Cystometrography

#### Ordering and Understanding Tests (Cont'd):

- Cystoscopy
- Fractional excretion of sodium
- Intravenous pyelography
- Radionuclide renal scan
- Renal angiography and venography
- Renal biopsy
- Retrograde pyelography
- Serologic tests for evaluating glomerulonephritis
- Urinary calculus analysis
- Urine electrolytes (sodium, potassium, chloride)
- Urine/plasma osmolality

#### Clinical Conditions:

##### *Acid-base disorders*

##### *Acute renal failure*

- Acute (ischemic) tubular necrosis
- Drug-induced (radiocontrast, analgesics, etc.)
- Interstitial
- Atheroembolic

##### *Chronic renal failure*

- Conservative management (before dialysis)
- Hemodialysis
- Peritoneal dialysis
- Transplantation

## ORGAN AND SYSTEM COMPETENCIES IN INTERNAL MEDICINE

### Clinical Training and Education in Nephrology (Cont'd):

#### *Fluid and electrolyte disorders*

#### *Glomerular diseases*

- Acute glomerulonephritis
- Chronic glomerulonephritis
- Nephrotic syndrome

#### *Hypertension*

- Hypertensive crisis
- Secondary hypertension

#### *Inherited diseases*

- Polycystic kidneys

#### *Kidney disease in systemic illness*

- Diabetes mellitus
- Hypertension
- Other systemic diseases

#### *Neoplasia*

- Bladder carcinoma
- Renal cell carcinoma

#### *Nephrolithiasis*

- Diagnosis of renal stone disease
- Management of acute renal colic

#### *Obstructive uropathy*

#### *Urinary tract infection*

- Cystitis
- Pyelonephritis

#### *Urologic disorders*

- Cancer of the prostate (detection)
- Erectile dysfunction
- Incontinence
- Prostate disease
- Bladder outlet obstruction