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There are various ways by which a patient with renal disease can present as either an initial outpatient or an inpatient consultation. Some patients can present with incidental hematuria and/or proteinuria. Symptoms generally vary but are more commonly noted with advanced stages of chronic kidney disease. A systematic, well organized approach is of utmost necessity in arriving at the correct diagnosis. A multitude of laboratory and ancillary studies, including a percutaneous renal biopsy (performed when necessary), are available to arrive at the right diagnosis. An algorithmic approach to hematuria and proteinuria is also presented.

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Biff F. Palmer	

Employing a systematic approach to the interpretation of serum chemistries is the most effective way to ensure abnormalities are detected and correctly interpreted. This article reviews a series of steps that can be used in both the outpatient and inpatient settings. These steps will help to ensure the clinician identifies not only overt abnormalities but also subtle disturbances that may lay hidden in a routine set of serum chemistry values.

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Sharon M. Moe	

Disorders of mineral metabolism are common in both the office and hospital setting. The diagnosis can be simplified by remembering the target organs involved—intestine, kidney, and bone—and

by assessing the presence of kidney disease, levels of parathyroid hormone, and vitamin D status. Although the list of possible causes for these derangements is long, most patients who have hypercalcemia have hyperparathyroidism or malignancy; those who have hypocalcemia, hypophosphatemia, and hypomagnesemia have reduced gastrointestinal absorption, and those who have hyperphosphatemia and hypermagnesemia have increased intake in the setting of kidney disease.

The Patient with Acute Kidney Injury

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Patricia Khalil, Preethi Murty, and Paul M. Palevsky

During the past half decade there has been a paradigm shift in the view of acute kidney disease that has resulted in a change in nomenclature from the older term, “acute renal failure,” to “acute kidney injury” (AKI). This article reviews the new criteria for diagnosis and staging of AKI and summarizes the current understanding of the many causes of AKI and the approach to diagnosis and management.

Glomerular and Tubulointerstitial Diseases

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Laurence H. Beck, Jr, and David J. Salant

This article provides a general overview of some of the more common or illustrative glomerular and tubulointerstitial disorders encountered in clinical practice. Disorders are grouped into those causing the nephrotic syndrome, the acute nephritic syndrome and rapidly progressive glomerulonephritis (RPGN), and chronic tubulointerstitial disease. This division is useful for narrowing the differential diagnosis and deciding on further testing and management. Elements of the past history, including detailed family, medication, and social histories, and recent symptoms and physical examination findings are as much a part of the diagnostic workup as are urinary and blood tests. An assessment of the tempo and severity of renal deterioration is critical to separate potential medical emergencies, such as RPGN, from those more indolent disorders that can be managed by the primary care physician.

Systemic Diseases with Renal Manifestations

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Asha Rajashekar, Mark A. Perazella, and Susan Crowley

This article discusses the epidemiology, recognition, screening, and management of six systemic diseases that commonly present with renal manifestations: diabetic nephropathy, lupus nephritis, congestive heart failure, HIV, liver disease, and dysproteinemias. Diabetic nephropathy remains the leading cause of end-stage renal disease in the United States. The outlook for patients who have lupus nephritis and HIV-associated nephropathy has improved in the last decade. Kidney disease is common in patients who have advanced liver disease, and creatinine-based methods do not provide an accurate estimation of renal function in this population.

Dysproteinemias are associated with protean renal manifestations, and renal disease may be the presenting manifestation.

Chronic Kidney Disease and Its Complications

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Robert Thomas, Abbas Kanso, and John R. Sedor

Chronic kidney disease (CKD) is a complex disease affecting more than 20 million individuals in the United States. Progression of CKD is associated with a number of serious complications, including increased incidence of cardiovascular disease, hyperlipidemia, anemia, and metabolic bone disease. CKD patients should be assessed for the presence of these complications and receive optimal treatment to reduce their morbidity and mortality. A multidisciplinary approach is required to accomplish this goal.

Urinary Tract Infections

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Dimitri M. Drekonja and James R. Johnson

Urinary tract infection (UTI), with its diverse clinical syndromes and affected host groups, remains one of the most common but widely misunderstood and challenging infectious diseases encountered in clinical practice. Antimicrobial resistance is a leading concern, with few oral options available to treat infections caused by Gram-negative organisms resistant to trimethoprim-sulfamethoxazole and fluoroquinolones, especially for patients with upper tract disease. Efforts should be made not to detect or treat asymptomatic bacteriuria and funguria; to ensure an appropriate duration of therapy for symptomatic infections; and to limit the use of broad-spectrum agents, especially fluoroquinolones, if narrower spectrum agents are available. Further research is needed regarding rapid diagnosis of UTI, accurate presumptive identification of patients with resistant pathogens, and development of new antimicrobials for drug-resistant UTI.

Nephrolithiasis

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Elaine M. Worcester and Fredric L. Coe

Kidney stones affect more than 5% of adults in the United States, and the prevalence is rising. The fundamental cause for all stones is supersaturation of urine with respect to the stone components; factors affecting solubility include urine volume, pH, and total solute excretion. Calcium stones are the most common in both adults and children and are associated with several metabolic disorders, the most common of which is idiopathic hypercalciuria. Therapy to prevent stones rests on lowering supersaturation, using both diet and medication. Effective treatment decreases stone recurrence and the need for procedures for stone removal.

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