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Patients with rheumatic diseases are susceptible to infections due to their underlying disease states as well as from immunosuppressive medications, highlighting the importance of vaccination, these same factors also pose challenges to vaccine efficacy, safety, and uptake. This article reviews the impact of immunosuppressive therapies and rheumatic disease on vaccine efficacy in this vulnerable patient population as well as discusses best practices.

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Nilasha Ghosh and Anne R. Bass

Immune checkpoint inhibitors activate the immune system to combat cancer. In doing so, however, they can cause immune-related adverse events (irAEs), including rheumatic syndromes, such as inflammatory arthritis, polymyalgia rheumatica, and myositis. This article reviews rheumatic irAEs that may be encountered in the general medicine practice and provides guidance to support prompt recognition, referral, and treatment of these patients.

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Lyn D. Ferguson, Naveed Sattar, and Iain B. McInnes

Individuals with rheumatoid arthritis, systemic lupus erythematosus, or gout have increased risk of cardiovascular disease (CVD) compared with the general population. This risk relates to a combination of traditional cardiovascular risk factors and disease-specific factors. Screening for CVD is important because CVD contributes to significant morbidity and mortality. Management includes tight control of disease activity to reduce inflammation, but with care to minimize use of nonsteroidal anti-inflammatory drugs and prolonged courses of high-dose corticosteroids. Traditional cardiovascular risk factors should be managed with a combination of lifestyle interventions and pharmacotherapy. The decision to start antihypertensive and lipid-lowering therapy should be based on individual CVD risk.

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Andrew L. Mammen

Although statins are generally safe and well tolerated, some patients experience muscle complaints that can be attributed to their use. Those with muscle discomfort but no demonstrable muscle weakness or creatine kinase (CK) elevations may have statin-associated muscle symptoms. Individuals with elevated CK levels, with or without muscle discomfort or weakness, may have statin-associated myotoxicity. Rare patients have statin-associated autoimmune myopathy, a disease characterized by proximal muscle weakness, elevated CK levels, and autoantibodies recognizing hydroxy-methyl-glutaryl coenzyme A reductase. In this review, the author provides the clinician with a practical approach to diagnosing and managing patients with each of these statin side effects.

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Diane Zisa and Susan M. Goodman

Patients with rheumatic disease, including those with systemic lupus erythematosus, rheumatoid arthritis, and spondyloarthritis, use total hip and knee arthroplasties at high rates. They represent a particularly vulnerable population in the perioperative setting because of their diseases and the immunosuppressant therapies used to treat them. Careful planning among internists, medical specialists, and the surgical team must therefore occur preoperatively to minimize risks in the postoperative period, particularly infection. Management of immunosuppressant medications, such as conventional synthetic disease-modifying antirheumatic drugs and targeted therapies including biologics, is one avenue by which this infectious risk can be mitigated.

**Fibromyalgia: Recognition and Management in the Primary Care Office** 285

Carmen E. Gota

Fibromyalgia is a chronic pain condition manifested by chronic generalized pain, fatigue, disordered sleep, and cognitive difficulties, persistent for at least 3 months. Other common complaints/conditions include symptoms of irritable bowel syndrome, headaches, intermittent paresthesias, and various mood disorders. Women are more commonly affected than men. The treatment approach should be individualized and focused on associated mood disorders, sleep, exercise, correction of maladaptive responses to pain, and coping with stress.

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Sarah F. Keller and Brian F. Mandell

Gout is the most common inflammatory arthritis in the United States. Gouty arthritis is associated with significant morbidity and mortality and is caused by hyperuricemia. Gout is effectively managed and potentially cured by decreasing the overall urate burden with serum urate-lowering therapy. When serum urate is maintained at less than 6.0 mg/dL urate deposition is resolved and gout can be cured. Unfortunately, owing to a

lack of physician monitoring and dose escalation the majority of patients do not achieve these urate levels.

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Sarah El Chami and Jason M. Springer

Giant cell arteritis (GCA) and polymyalgia rheumatica (PMR) are considered 2 diseases on the same spectrum due to their many underlying similarities. In recent years, both diseases have witnessed both diagnostic and treatment advances, which shaped the way we manage them. In this article, the authors focus on different diagnostic modalities in GCA as well as the presence of different clinical phenotypes and the role of screening for aortic involvement. The authors also discuss traditional treatments and the role of evolving steroid-sparing agents in the management of both GCA and PMR.

**Suspecting and Diagnosing the Patient with Spondyloarthritis and What to Expect from Therapy** 325

Philip J. Mease

Spondyloarthritis is a common rheumatologic disease, present in up to 2% of the population, characterized by inflammatory arthritis, often with enthesitis, dactylitis, spondylitis, and skin disease. It has historically been characterized as ankylosing spondylitis, psoriatic arthritis, arthritis associated with inflammatory bowel disease, reactive arthritis, and undifferentiated spondyloarthritis. These subsets are now classified as axial-predominant and peripheral-predominant spondyloarthritis. This article provides an updated understanding of disease classification and practical advice about diagnosis to aid in the determination of which patients should be referred to rheumatology. It is important to provide patients the opportunity to have early and effective therapy.

**Pregnancy and Management in Women with Rheumatoid Arthritis, Systemic Lupus Erythematosus, and Obstetric Antiphospholipid Syndrome** 341

Adela Castro-Gutierrez, Kristen Young, and Bonnie L. Bermas

Management of women with rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), and obstetric antiphospholipid syndrome (APS) during pregnancy presents unique clinical challenges. Women with both RA and SLE can have disease flares during pregnancy, leading to pregnancy complications, such as preeclampsia, small-for-gestational-age infants, and preterm delivery. Disease should be under control prior to conception. Women with obstetric APS need to be anticoagulated during pregnancy. Many but not all antirheumatic medications can be used during pregnancy and lactation.

**Rheumatoid Arthritis: Early Diagnosis and Treatment** 355

John J. Cush

Rheumatoid arthritis (RA) is a chronic, progressive inflammatory disorder that manifests as a symmetric polyarthritis of small and large joints that may lead to joint and periarticular structural damage and the

consequences of systemic inflammation. This overview of early RA examines the unmet needs and challenges in RA, how to best diagnose RA, and pitfalls in early diagnosis and treatment. The rules for referral to a rheumatologist are reviewed. Primary care physicians are at the front line of early diagnosis and need to start disease-modifying therapy as soon as a diagnosis of RA is established.

**Management of Knee Osteoarthritis: What Internists Need to Know**

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Joel A. Block and Dmitriy Cherny

Knee osteoarthritis (OA) is a common and morbid condition. No disease-modifying therapies exist; hence the goals of current treatment are to palliate pain and to retain function. OA is significantly influenced by the placebo effect. Nonpharmacologic interventions are essential and have been shown to improve outcomes. Canes, unloading braces, and therapeutic heating/cooling may be valuable. Pharmacotherapy options include topical and oral nonsteroidal anti-inflammatory drugs, duloxetine, and periodic intra-articular glucocorticoids and hyaluronans. Opioids, intra-articular stem cells, and platelet-rich plasma are not recommended. Novel targets such as nerve growth factor are under investigation and may be approved soon for OA pain.

**Antinuclear Antibody Testing for the Diagnosis of Systemic Lupus Erythematosus**

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Rand A. Nashi and Robert H. Shmerling

Systemic lupus erythematosus (SLE) is an autoimmune inflammatory condition that may involve multiple organ systems. Although the antinuclear antibody (ANA) test is positive in nearly every case of SLE, it is not specific for this disease and must be interpreted in the appropriate clinical context. Key features that warrant ANA testing include unexplained multisystem inflammatory disease, symmetric joint pain with inflammatory features, photosensitive rash, and cytopenias. ANA staining patterns and more specific autoantibody testing may be helpful in diagnosis of suspected SLE or ANA-associated disease. For patients with nonspecific symptoms, such as malaise and fatigue, ANA testing is of limited value.