

adverse effects of liver disease, infections, bone marrow suppression, gastrointestinal disturbance, teratogenic effects, and alarming but unconfirmed risk of cancer. Patient/parent education includes frank discussion about sexual activity and birth defects. Sexually active teenagers need effective birth control. As a precaution, pregnant caregivers or those trying to conceive need to avoid contact with methotrexate. Instructions about avoiding live immunizations and alcohol are essential during patient education. Sulfasalazine may be used in children with axial arthritis, a positive test result for HLA-B27, or symptoms of inflammatory bowel disease, given this drug's success in these select groups of patients.

Biologic disease-modifying antirheumatic drugs.

Biologic DMARDs are initiated when there is significant disease activity and/or poor prognostic indicators after unsuccessful treatment with methotrexate. Tumor necrosis factor- α (TNF- α) inhibitors are the most frequently used biologic DMARDs and include etanercept, infliximab, and adalimumab. All three reduce the proinflammatory response that promotes arthritis. Anakinra (interleukin-1 receptor antagonist), tocilizumab (interleukin-6 receptor antagonist), and abatacept (selective T-cell costimulation blocker) are also biologics that may be selected for use in systemic JIA (tocilizumab and off-label anakinra) or in children with JIA and limited response to other biologics (tocilizumab and abatacept). Patient education focuses on the increased risk for infection, holding the scheduled dose if the child has fever or symptoms of infection, and seeking medical attention at early onset of illness. All patients starting biologic DMARDs need a negative TST prior to starting. Although biologic DMARDs have been found safe and effective, the potential for malignancy needs to be addressed and patients need routine safety monitoring ([Tarkiainen, Tynjälä, Vähäsalo, et al, 2015](#); [Ruperto and Martini, 2011](#)).

Glucocorticoids.

Glucocorticoids are potent antiinflammatory agents; however the significant adverse effects of long-term systemic steroids are undesirable, consequently they are used in conjunction with other medications to provide prompt antiinflammatory response with acute arthritis then tapered and discontinued. High-dose IV