Jarisch-Herxheimer reactions are commonly seen in the first 24 hours of treatment and are characterized by low-grade fever, headache, myalgias, malaise, and new skin lesions. Thought to be due to cytokine release, and may be seen after treatment of other spirochetal illnesses (e.g., Lyme disease, relapsing fever). Treat with antipyretics.

**TOXIC SHOCK SYNDROME (TSS)**

Usually affects healthy individuals; associated with *exotoxins* released by certain strains of *S. aureus* or group A streptococci (rarely groups B, C, or G). May cause a concurrent infection (osteomyelitis, occult abscesses, erysipelas, necrotizing fasciitis or myositis, secondary infection of chickenpox wounds) or simply colonize a mucosal, postoperative, or burn-wound surface.

- **Streptococcal TSS:** Commonly associated with concurrent invasive infections. Invasive group A streptococcal strains usually have type 1 M protein, a cell-surface protein that is antiphagocytic and may serve as a superantigen. Strains may also produce streptococcal pyrogenic exotoxins A, B, or C.
- **Staphylococcal TSS:** Associated with menses and with the use of hyperabsorbable tampons that have now been withdrawn from the market (“menstrual TSS”). Most cases are now nonmenstrual TSS due to vaginal or surgical wound colonization. Strains may produce superantigens TSST-1 (75%) or staphylococcal enterotoxins B and C.

**SYMPTOMS/EXAM**

- Staphylococcal or streptococcal isolation, evidence of end-organ damage (renal insufficiency, coagulopathy, abnormal LFTs), rash, ARDS, generalized edema or effusions, soft tissue necrosis.
- Staphylococcal TSS also requires fever and a diffuse macular rash that may subsequently desquamate (especially on the palms and soles). Other features include vomiting, diarrhea, severe myalgias, and confusion.