S. aureus (methicillin-sensitive *S. aureus*, methicillin-resistant *S. aureus* [MRSA])

Haemophilus influenzae

Older Children

S. aureus

Pseudomonas organisms

Salmonella organisms

Neisseria gonorrhoeae

Adolescents and Adults

Pseudomonas organisms

Mycobacterium tuberculosis

From McCance KL, Huether SE: *Pathophysiology: the biological basis for disease in adults and children,* ed 6, St Louis, 2010, Mosby/Elsevier.

Pathophysiology

In acute osteomyelitis, bacteria adhere to bone, causing a suppurative infection with inflammatory cells, edema, vascular congestion, and small-vessel thrombosis; the result is bone destruction, abscess formation, and dead bone (sequestra). Infection within the bone can rupture through the cortex into the subperiosteal space, stripping loose periosteum and forming an abscess. As dead bone is resorbed, new bone is formed along the live bone and infection borders. This surrounding sheath of live bone is called an **involucrum**. Sinus tracts from perforations in the involucrum may drain pus through soft tissue to the skin.

The pathology of osteomyelitis is different in infants, children older than 1 year old, and adults. In infants, blood vessels cross the growth plate into the epiphysis and joint space, which allows infection to spread into the joint. In children, the infection is contained by the growth plate, and joint infection is less likely