gray to white, glistening, nonhemolytic colonies on blood agar. It lacks urease and nitrate reductase and does not ferment most carbohydrates. The predominant syndrome associated with *C. jeikeium* is sepsis with pneumonia, endocarditis, meningitis, osteomyelitis, and epidural abscess. Risk factors for *C. jeikeium* infection include hematologic malignancy, neutropenia from comorbid conditions, prolonged hospitalization, exposure to multiple antibiotics, and skin disruption. There is evidence that *C. jeikeium* is part of the inguinal, axillary, genital, and perirectal flora of hospitalized patients.

Broad-spectrum antimicrobial therapy appears to select for colonization. Gram's staining shows gram-positive coccobacillary forms slightly resembling streptococci. Moreover, *C. jeikeium* is resistant to all antibiotics tested except vancomycin. Effective therapy involves removal of the infectious source, whether a catheter, prosthetic joint, or prosthetic valve. Efforts have been made to prevent *C. jeikeium* infection by improving hygienic conditions for high-risk patients in intensive care settings with antibacterial soap.

***C. urealyticum* (Group D2)** Identified as a urease-positive nondiphtherial *Corynebacterium* in 1972, *C. urealyticum* is an opportunistic pathogen causing sepsis and urinary tract infection. *C. urealyticum* appears to be the etiologic agent of a severe urinary tract syndrome known as *alkaline-encrusted cystitis*, a chronic inflammatory bladder infection associated with deposition of ammonium magnesium phosphate on the surface and walls of ulcerating lesions in the bladder. In addition, *C. urealyticum* has been associated with pneumonia, peritonitis, endocarditis, osteomyelitis, and wound infection. It is similar to *C. jeikeium* in its resistance to most antibiotics except vancomycin. Vancomycin therapy has been used successfully in severe infections.

***C. minutissimum* (Erythrasma)** Erythrasma is a cutaneous infection producing reddish-brown, macular, scaly, pruritic intertriginous patches. The dermatologic presentation under the Wood's lamp is of coral red fluorescence. *C. minutissimum* appears to be a common cause of erythrasma, although there is evidence for a polymicrobial etiology in certain settings. This microbe has also been associated with bacteremia in patients with hematologic malignancy. Erythrasma responds to topical erythromycin, clarithromycin, clindamycin, or fusidic acid, although more severe infections may require oral macrolide therapy.

Other Nondiphtherial Corynebacterial Infections *C. xerosis* is a human commensal found in the conjunctiva, nasopharynx, and skin. This nontoxigenic organism is occasionally identified as a source of invasive infection in immunocompromised or postoperative patients and prosthetic joint recipients. *C. striatum* is found in the anterior nares, skin, face, and upper torso of healthy individuals. Also nontoxigenic, this organism has been associated with invasive opportunistic infections in severely ill or immunocompromised patients. *C. amycolatum* is isolated from human skin and is identified on the basis of a unique 16S ribosomal RNA sequence associated with opportunistic infection. *C. glucuronolyticum* is a nonlipophilic species that causes male genitourinary tract infections such as prostatitis and urethritis. These infections may be successfully treated with a wide variety of antibacterial agents, including β-lactams, rifampin, aminoglycosides, or vancomycin; however, the organism appears to be resistant to fluoroquinolones, macrolides, and tetracyclines. *C. imitans* has been identified in eastern Europe as a nontoxigenic cause of pharyngitis. *C. auris* has been identified in children with otitis media; it is susceptible to fluoroquinolones, rifampin, tetracycline, and vancomycin but resistant to penicillin G and variably susceptible to macrolides. *C. pseudodiphtheriticum* (*C. hoffmanii*) is a nontoxigenic species that is part of the normal human flora. Human infections—particularly endocarditis of either prosthetic or natural valves and invasive pneumonia—have been reported only rarely. Although *C. pseudodiphtheriticum* may be isolated from the nasopharynx of patients with suspected diphtheria, it is part of the normal flora and does not produce diphtheria toxin. *C. propinquum*, a close relative of *C. pseudodiphtheriticum*, is part of CDC group ANF-3 and is isolated from the human respiratory tract and blood. *C. afermentans* subspecies *lipophilum* belongs to CDC group ANF-1 and has been isolated from human blood and abscesses. *C. accolens* has been isolated from wound drainage, throat swabs, and sputum and is typically identified as a satellite of staphylococcal organisms; this species has been associated with endocarditis. *C. bovis* is a veterinary commensal that has not been clearly associated with human disease. *C. aquaticum* is a water-dwelling organism that is occasionally isolated from patients using medical devices (e.g., for chronic ambulatory peritoneal dialysis or venous access).

Rhodococcus *Rhodococcus* species are phylogenetically related to the corynebacteria. These gram-positive coccobacilli have been associated with tuberculosis-like infections in humans with granulomatous pathology. While *R. equi* is best known, other species have been identified, including *R.* (*Gordonia*) *bronchialis, R.* (*Tsukamurella*) *aurantiacus, R. luteus, R. erythropolis, R. rhodochrous*, and *R. rubropertinctus*.

R. equi has been recognized as a cause of pneumonia in horses since the 1920s and as a cause of related infections in cattle, sheep, and swine. It is found in soil as an environmental microbe. The organisms vary in length; appear as spherical to long, curved, clubbed rods; and produce large irregular mucoid colonies. *R. equi* cannot ferment carbohydrates or liquefy gelatin and is often acid fast. An intracellular pathogen of macrophages, *R. equi* can cause granulomatous necrosis and caseation. This organism has most commonly been identified in pulmonary infection, but infections of brain, bone, and skin also have been reported. Most commonly, *R. equi* disease manifests as nodular cavitary pneumonia of the upper lobe—a picture similar to that seen in tuberculosis or nocardiosis. Most patients are immunocompromised, often by HIV infection. Subcutaneous nodular lesions have also been identified. The involvement of *R. equi* should be considered when any patient presents with a tuberculosis-like syndrome.

Infection due to *R. equi* has been treated successfully with antibiotics that penetrate intracellularly, including macrolides, clindamycin, rifampin, and trimethoprim-sulfamethoxazole. β-Lactam antibiotics have not been useful. The organism is routinely susceptible to vancomycin, which is considered the drug of choice.

Other Related Species • ***ACTINOMYCES PYOGENES*** This organism, a well-known pathogen of cattle, sheep, goats, and pigs, causes seasonal leg ulcers in rural Thailand. A few human cases of sepsis, endocarditis, septic arthritis, pneumonia, meningitis, and empyema have been reported. This species is susceptible to β-lactams, tetracyclines, aminoglycosides, and fluoroquinolones.

ARCANOBACTERIUM HAEMOLYTICUM *A. haemolyticum* was identified as an agent of wound infections in U.S. soldiers in the South Pacific during World War II. It appears to be a human commensal of the nasopharynx and skin, but has also been implicated in pharyngitis and chronic skin ulcers. In contrast to the much more common pharyngitis caused by *Streptococcus pyogenes, A. haemolyticum* pharyngitis is associated with a scarlatiniform rash on the trunk and proximal extremities in about half of cases; this illness is occasionally confused with toxic shock syndrome. Because *A. haemolyticum* pharyngitis primarily affects teenagers, it has been postulated that the rash-pharyngitis syndrome may represent copathogenicity, synergy, or opportunistic secondary infection with Epstein-Barr virus. *A. haemolyticum* has also been reported as a cause of bacteremia, soft tissue infections, osteomyelitis, and cavitary pneumonia, predominantly in the setting of underlying diabetes mellitus. The organism is susceptible to β-lactams, macrolides, fluoroquinolones, clindamycin, vancomycin, and doxycycline. Penicillin resistance has been reported.