Corynebacterium spp (LTR79339)

Edit Approved By: Dragan, Tatiana (07/31/2023) **Revision: 4.00**

Organism **Corynebacterium spp.**

Clinical These organisms are part of the normal flora of the skin and mucous membranes. Different species are associated with a variety of infections, often as opportunistic pathogens in immunocompromised patients.

Clinical infections associated with Corynebacterium spp.

ORGANISM	CLINICAL
C. accolens *(lipophilic)*	Found in eye, ear, nose and oropharynx. Associated with endocarditis, osteomyelitis, abscesses.
C. afermentans subsp afermentans	Part of normal human skin flora. Isolated mainly from blood cultures, abscesses. May exhibit multiple resistance.
C. afermentans subsp lipophilum	Isolated mainly from blood cultures and superficial wounds. Associated with endocarditis.
C. amycolatum	Most frequently encountered species in clinical specimens. Part of normal skin flora. Has been associated with wound, implant/catheter related, respiratory and urinary tract infections, bacteremia and endocarditis.
C. argentoratense	Isolated from human throat and blood cultures.
C. aurimucosum	Recovered from female urogenital tract. Isolated from blood cultures and has been associated with genitourinary tract infections (mainly females) and complications of pregnancy.
C. auris	Found in external auditory canal and may be associated with otitis media in children.
C. bovis	Causes mastitis (affecting milk production) in cattle. Isolated from blood culture and prosthetic joint infection in humans.
C. confusum	Isolated from patients with foot infections, breast abscesses and blood cultures.
C. coyleae	Isolated from blood cultures, sterile body sites, abscesses and genitourinary specimens.
CDC group F-1 *(lipophilic)*	Possible pathogen of the urinary tract. (Rapidly hydrolyzes urea).
C. diphtheriae	Toxigenic strains can cause pharyngeal diphtheria, cutaneous diphtheria, or endocarditis. Non-toxigenic strains have been associated with septicemia, endocarditis, osteomyelitis, septic arthritis, and abscesses.
C. durum	Isolated from respiratory tract, blood, abscesses and gingiva. Most common Corynebacterium from throat specimens. Its pathogenic potential is unclear.
C. falsenii	Isolated from sterile body fluids.
C. freneyi	Isolated from skin related specimens, genitourinary specimens, breast abscesses and blood cultures.
C. glucuronolyticum	Isolated from genitourinary specimens where it probably represents normal genitourinary (GU) tract flora. Has been associated with GU tract infections in males (prostatitis/urethritis). Its role in female GU tract infections is uncertain. Isolated from blood and has been implicated in peritonitis, bone/joint infections and breast abscesses.
C. imitans	Isolated from throat and blood cultures.

Corynebacterium spp., Continued

Clinical infections associated with Corynebacterium spp. (continued)

ORGANISM	CLINICAL
C. jeikeium *(lipophilic)*	Isolated from hospital environments and colonizes the skin of hospitalized patients, especially those who have received broad-spectrum antibiotics. Risk factors for infection include prolonged hospitalization, previous antibiotic therapy, neutropenia, and loss of integrity of skin/soft tissues. Infections range from septicemia, pneumonia, endocarditis, osteomyelitis, meningitis, peritonitis, foreign material related infections, wound infections, and urinary tract infections
C. kroppenstedtii *(lipophilic)*	Isolated from sputum, otitis externa and breast abscesses.
C. kutscheri	Normal oral commensal of rodents, primarily mice and rats. A well-documented human case of soft-tissue infection has been described following a rat bite.
C. lipophiloflavum *(lipophilic)*	Isolated from vaginal specimens and have been described from blood cultures. May be misidentified as *C. urealyticum.*
C. macginleyi *(lipophilic)*	Isolated almost exclusively from eye specimens, especially in association with conjunctivitis. Has also been implicated in bacteremia, VAP, endocarditis/ endovascular infections and UTI.
C. mastitidis	To date found to cause mastitis in sheep. C. mastitidis-like organisms recovered from ocular specimens (patients with cataracts, diabetic retinopathy, dry eyes).
C. matruchotii	Isolated from human oral cavity. Rare human pathogen.
C. minutissimum	Part of normal skin flora. Association with erythrasma is controversial. It has been associated with bacteremia, endocarditis, abscesses, meningitis, cellulitis, peritonitis, wounds, pyelonephritis, catheter-related infections and urinary and respiratory tract infections.
C. mucifaciens	Isolated from blood and sterile body sites, as well as abscesses, soft tissue and dialysate fluid. Only *Corynebacterium spp*. to have mucoid colonies.
C. mycetoides	Isolated from skin ulcers.
C. propinquum	Part of normal oropharyngeal flora, has been recovered from blood and respiratory specimens. Possible association with endocarditis and pneumonia. Closely related to *C. pseudodiphtheriticum*.
C. pseudodiphtheriticum	Part of normal oropharyngeal flora but has been associated with respiratory infections (necrotizing tracheitis, tracheobronchitis, pneumonia) in patients at risk (cardiopulmonary disease, immunosuppression, endotracheal intubation). Has also been associated with endocarditis, wound, prosthetic/foreign body, urinary tract infections, keratitis, conjunctivitis and isolated from peritoneal and synovial fluid.
C. pseudotuberculosis	Associated with suppurative granulomatous lymphadenitis usually following animal contact (sheep, goat, horse).
C. resistens	Associated with bacteremia and abscesses. Multiresistant (beta-lactams, aminoglycosides, macrolides, quinolones and tetracycline). Susceptible to vancomycin.
C. riegelii	Isolated from urine and blood (including cord blood). Associated with urinary tract infections in females.

Corynebacterium spp., Continued

Clinical infections associated with Corynebacterium spp. (continued)

ORGANISM	CLINICAL
C. simulans	Isolated from skin related specimens (foot abscess, lymph node biopsy and boil), blood and bile.
C. singulare	Isolated from semen and blood cultures.
C. stationis	Originally recovered from seawater. Has been isolated from blood cultures.
C. striatum	Part of normal skin and oropharyngeal flora. Can cause opportunistic infections in immunocompromised patients or those with prosthetic devices and is usually associated with prior antibiotic exposure. Has been associated with bacteremia, implant/catheter related infections, endocarditis, meningitis, chorioamnionitis, peritonitis, keratitis, bronchitis, osteomyelitis, necrotic fasciitis, abscesses and pneumonia (may be associated with nosocomial transmission). Often exhibits multiple resistance.
C. sundsvallense	Isolated from blood, vagina, IUD and chronic groin sinus drainage site.
C. thomssenii	Isolated from pleural effusion and from environment.
C. tuberculostearicum *(lipophilic)*	Commonly exhibits multidrug resistance. Probably a frequent colonizer on the skin of hospitalized patients, but has been documented to cause infections of wounds and surgical sites with osteomyelitis. Associated with catheter infections, bacteremia, endocarditis, wound infections, peritonitis, CSF, synovial fluid and asymptomatic bacteriuria.
C. ulcerans	Closely resembles *C. pseudotuberculosis.* Associated with diphtheria-like illnesses (pharyngeal, cutaneous, pneumonia). Certain strains produce diphtheria toxin and can cause a serious condition similar to diphtheria infection. Pneumonia caused by this organism is rare but can be fatal. Transmission from companion pets to humans has been described.
C. urealyticum	Isolated from hospital environments and colonizes the skin of hospitalized patients. Associated with urinary tract infections in patients at risk (immunosuppression, urologic manipulation, previous UTI, urologic disease, especially alkaline-encrusted cystitis), bacteremia, endocarditis and wound infections.
C. ureicelerivorans (lipophilic)	Isolated from ascites and multiple blood cultures from immunocompromised patients or patients with digestive disorders.
C. xerosis	Isolated from ear, brain abscess and osteomyelitis.

Usual susceptibility pattern

Corynebacterium spp. exhibit a variety of susceptibility patterns. Penicillin resistance is now common in various *Corynebacterium spp.* Susceptibility to erythromycin, clindamycin, tetracycline, and ciprofloxacin is variable. Most isolates of *C. amycolatum*, *C. jeikeium*, *C. resistens* and *C. urealyticum* are multiresistant. Vancomycin susceptibility is predictable and should be the empiric drug of choice until susceptibility testing is performed. All strains remain susceptible to linezolid and tigecycline. Most are susceptible to daptomycin but daptomycin resistance has been reported in single strains of *C. jeikeium* and *C. striatum*

Corynebacterium spp., Continued

Susceptibility method

Etest method using Mueller-Hinton agar with 5% sheep blood incubated in 5% CO_2 at 35°C for 20-24 hours. Incubation should be prolonged for 48 hours for slow growing *Corynebacterium spp*.

Note:

For Etest use 1.0 McFarland suspension in broth.
Isolates demonstrating susceptible results for beta-lactam antibiotics (ceftriaxone, cefotaxime, penicillin, meropenem) should be read at 48 hours before reporting susceptibility results. Resistant results can be reported at 24 hours.

Susceptibility reporting

	CSF/ Brain	Blood/ Endo vascular catheter	Sterile Body Site	Urine	Other	Comments
Cefotaxime	*	*	*	*	*	Report if patient ≤1 month instead of ceftriaxone
Ceftriaxone	✓	✓	✓	✓	✓	Do not report if patient ≤1 month
Ciprofloxacin			✓	✓	✓	Do not report in patients < 18 y
Clindamycin			✓		✓	
Daptomycin		*	*			*Physician request only **See Special Considerations**
Doxycycline				✓	✓	If patient <8 y see **Special Considerations**
Linezolid	*	*	*	*		*Physician request only Consult microbiologist **See Special Considerations**
Meropenem		2	2			2nd line if pen I/R
Moxifloxacin			*		*	*If cipro, doxy and pen I/R see **Special Considerations**
Penicillin	✓	✓	✓	✓	✓	
Vancomycin	✓	✓	✓	2	✓	2nd line if cipro, doxy and pen I/R **See Special Considerations**

Special considerations

Daptomycin:	Corynebacterium sp. should be susceptible to this antibiotic. Consult microbiologist if not susceptible. If not susceptible, the identification of the organism and its susceptibility should be confirmed by repeat testing. Consider sending confirmed isolates to reference laboratory.
	Daptomycin is inactivated by surfactant in the lungs. Therefore this antibiotic should not be used for the treatment of respiratory infections. Blood isolates where Daptomycin is reported, add comment: "Daptomycin is inactivated by lung surfactant and should not be used for respiratory infections." **(21127)**
Doxycycline:	If patient <8 y add comment: "Doxycycline can now be prescribed for children <8y for short-course (<21d) therapy: OTHER tetracyclines are still contraindicated for this age group."
Linezolid:	Consult microbiologist before testing and reporting. Send to reference lab for testing.
	Corynebacterium sp. should be susceptible to this antibiotic. Consult microbiologist if not susceptible. If not susceptible, the identification of the organism and its susceptibility should be confirmed by repeat testing.
Moxifloxacin:	Newer quinolones may have better activity than ciprofloxacin against gram positive organisms. Moxifloxacin appears to have better activity. Note: Moxifloxacin does not achieve therapeutic concentrations in urine.
	If cipro, doxy **and** pen I/R, consult microbiologist regarding the need for moxifloxacin susceptibility testing.
	If moxifloxacin testing requested by microbiologist send to reference lab for testing. Consult Tech II for send out process.
	There are no current CLSI breakpoints. Use EUCAST breakpoints for interpretation: MIC: ≤ 0.5 µg/mL = S; ≥ 1.0 µg/mL = R Add comment: "Interpretation is based upon EUCAST breakpoints." **(21178)**
Vancomycin:	Corynebacterium sp. should be susceptible to this antibiotic. Consult microbiologist if not susceptible. If not susceptible, the identification of the organism and its susceptibility should be confirmed by repeat testing. Consider sending confirmed isolates to reference laboratory.

Interpretation

For Etest, report actual MIC result. For interpretation (S, I, or R) report according to the nearest higher doubling dilution **(Appendix 1)**.

Use **CLSI** interpretive document for **Corynebacterium species and Related Coryneform Genera.**

For moxifloxacin - Refer to **Special Considerations**