Staphylococcus spp - coagulase negative (LTR81528)

Edit Approved By: Van der Walt, Peet (09/27/2023) **Revision: 7.00**

Organism

Staphylococcus spp. (coagulase negative)

- ***S. auricularis***
- ***S. capitis***
- ***S. caprae***
- ***S. cohnii***
- ***S. epidermidis***
- ***S. haemolyticus***
- ***S. hominis***
- ***S. pasteuri***
- ***S. pettenkoferi***
- ***S. sciuri***
- ***S. simulans***
- ***S. warneri***
- ***S. xylosus***

Clinical

These organisms are part of the normal flora of skin. They are low level pathogens, but have been associated with prosthetic material/catheter related infections, endocarditis, wound infections, bacteremia/septicemia in neonates and neutropenic patients, endophthalmitis, and rarely urinary tract infections.

Usual susceptibility pattern

These organisms are often resistant to penicillin. Susceptibility to clindamycin, oxacillin, tetracyclines and TMP-SMX is variable.
These organisms are susceptible to vancomycin and linezolid. Reduced susceptibility (especially in *S. haemolyticus*), and tolerance to vancomycin have been reported. Vancomycin non-susceptible strains of *S. capitis* has been associated with late onset sepsis in preterm infants, typically with prior exposure to vancomycin. Although they are usually susceptible to daptomycin non-susceptible isolates have been reported.

Susceptibility method

VITEK2. Additional tests include disc diffusion and Etest method.

Disc diffusion		Mueller-Hinton agar incubated in ambient air at 35°C for 16-18 hours
Cefoxitin Screen disc		Mueller-Hinton agar incubated in ambient air at 35°C for 24 hours. Use 0.5 McFarland suspension in saline.
Etest	Oxacillin	Mueller-Hinton agar with 2% NaCl incubated in ambient air at 35°C for 48 hours. Use 1.0 McFarland suspension in saline.
	Vancomycin	Mueller-Hinton agar incubated in ambient air at 35°C for 24 hours. Use 0.5 McFarland suspension in saline.
	Other	Mueller-Hinton agar incubated in ambient air at 35°C for 16-20 hours. Use 0.5 McFarland suspension in saline.

Staphylococcus spp. (coagulase negative), Continued

Susceptibility reporting

	CSF/ Brain	Blood/ Endo vascular Catheter	Sterile Body Site	PJI (see Note)	Urine	Eye (see Note)	Other	Comments
Cefazolin		✓	✓	✓	✓	✓	✓	Report same as ox/clox
Clindamycin			✓	✓		✓	✓	**See Special Considerations**
Doxycycline			✓	✓	✓	✓	✓	If tetra S – report doxy S If tetra I/R – do doxy disc Do not report if patient <8 y
Erythromycin			*	*		*	*	*Test but do not report – **See Special Considerations**
Levofloxacin				✓		✓		Do not report in patients < 18 y (exception eye specimens)
Moxifloxacin						✓		Do not report in patients < 18 y (exception eye specimens)
Nitrofurantoin					✓			
Oxacillin/ Cloxacillin	✓	✓	✓	✓	✓	✓	✓	Refer to *Staphylococcus Oxacillin Reporting Flowchart* (Doc ID: MIC - 37934)
Rifampin				✓				
TMP-SMX			✓	✓	✓	✓	✓	Do not report if patient <2 months
Vancomycin	2	2	2	2	2	2	2	2nd line if ox/clox R If vancomycin ≥4 µg/mL see **Special Considerations**

Note

Eye specimens	Susceptibility testing usually only performed on the following:

• vitreous fluid	• canaliculitis	• corneal ulcer / scrapings
• chamber aspirate	• endophthalmitis	• contact lens related infections
• intraocular fluid	• donor sclera	• ophthalmology clinic/ward
• keratitis	• chorioretinitis	• history of failure of therapy
• injury/surgery	• cornea	• preseptal/orbital cellulitis

Prosthetic joint infections (**PJI**)	For **significant** *Staphylococcus sp.* isolated from joint fluids with prosthetic joint/implant associated infections (PJI), joint tissues, or foreign bodies from joints. Refer to *Staphylococcus spp. Doxycycline, Levofloxacin, SXT and Rifampin Reporting Flowchart* (Doc ID: MIC – 14945).

Staphylococcus spp. (coagulase negative), Continued

Special considerations

<table>
<tr><td>Clindamycin/ Erythromycin:</td><td>If clindamycin S/I and erythromycin I/R this may indicate inducible resistance.
<table>
<tr><th>IF…</th><th>THEN….</th></tr>
<tr><td>VITEK2 ICR is positive</td><td>• Report clindamycin R
• Add comment:
“This isolate is presumed to be resistant to clindamycin based on the detection of inducible clindamycin resistance in vitro”. #A139</td></tr>
<tr><td>VITEK2 ICR is negative</td><td>• Report clindamycin as tested</td></tr>
</table></td></tr>
<tr><td>Vancomycin:</td><td>Isolates with VITEK2 MIC ≥4 µg/mL, confirm MIC by Etest and consult microbiologist.
<table>
<tr><th>IF vancomycin is…</th><th>THEN….</th></tr>
<tr><td>4 µg/mL (confirmed by Etest)</td><td>• The clinical failure rate of vancomycin may be significant.
• Consult Technical Supervisor
• Add comment:
“This isolate tests at the upper limit of susceptibility to vancomycin. Careful follow up to assess clinical response is required, or an alternate agent should be considered. Expert consultation is suggested.”#va04</td></tr>
<tr><td>8-16 µg/mL (confirmed by Etest)</td><td>• Consult Technical Supervisor
• Report vancomycin as I
• Add comment: “This isolate exhibits resistance to vancomycin.” #va11
• Notify Infection Control & MOH</td></tr>
<tr><td>≥ 32 µg/mL (confirmed by Etest)</td><td>• Consult Technical Supervisor
• Report vancomycin as R
• Add comments:
“Preliminary tests indicate this organism may be resistant to vancomycin” #va12
“Referred to Public Health Laboratory, Alberta Precision Laboratories. for Van gene testing.” #va13
• Notify Infection Control & MOH
• Send to reference laboratory for Van gene testing.</td></tr>
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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 **Staphylococcus spp.**

For oxacillin and cefoxitin: Refer to *Staphylococcus Oxacillin Reporting Flowchart* (Doc ID: MIC - 37934)