

Streptococcus pyogenes (LTR70543)

Edit Approved By: Van der Walt, Peet (10/21/2022)

Revision: 4.00

Organism**Streptococcus pyogenes**

- Streptococcus Group A
-

Clinical

This organism causes a variety of infections including pharyngitis, skin/soft tissue infections (including necrotizing fasciitis, myositis), endocarditis, meningitis, postpartum sepsis, arthritis, and toxic “shock-like” syndrome. *S. pyogenes* pharyngitis may be associated with the non-suppurative complications of acute rheumatic fever and glomerulonephritis (the latter may also follow skin/soft tissue infections).

Usual susceptibility pattern

This organism is susceptible to penicillin. Rare reports of increasing MICs have been reported. Penicillin tolerance has not been well studied in *Streptococcus pyogenes* but does not appear to be as significant as it is for other beta-haemolytic Streptococci. Resistance to macrolides and clindamycin is significant.

Susceptibility method

VITEK2. Additional tests (disc diffusion or Etest method) using Mueller-Hinton agar with 5% sheep blood incubated in 5% CO₂ at 35°C for 20-24 hours.

Note: For Etest use 0.5 McFarland suspension in broth.
For mucoid strains use 1.0 McFarland.

Streptococcus pyogenes, Continued

Susceptibility reporting

	CSF/ Brain	Blood	Sterile Body Site	Throat	Urine	Other	Comments
Amoxicillin					✓		Report same as penicillin
Ampicillin					✓		If amp nonsusceptible see Special Considerations
Cefazolin		✓	✓			✓	Report same as penicillin
Cefotaxime	*	*	*				*Report if patient ≤3 months If cefotaxime nonsusceptible see Special Considerations
Ceftriaxone	✓	✓	✓				Do not report if patient ≤1 month If ceftriaxone nonsusceptible see Special Considerations
Cephalexin				✓	✓		Report same as penicillin
Clindamycin			✓	✓		✓	See Special Considerations
Erythromycin			*	✓***		*	* Test but do not report ** See Special Considerations
Levofloxacin					✓		Do not report if patient <18 y
Penicillin	✓	✓	✓	✓		✓	If penicillin nonsusceptible see Special Considerations
Tetracycline				2			2 nd line if clinda I/R Do not report if patient <8 y
Vancomycin	✓	✓	✓			2	2 nd line if co-isolated with MRSA If vanco nonsusceptible see Special Considerations

Note

Blood cultures/ Sterile body sites/ Deep wounds	Perform susceptibility testing according to reporting chart. <ul style="list-style-type: none"> If co-isolated with organisms where TMP-SMX is routinely reported, add comment &A373 						
Throat	<table border="1"> <thead> <tr> <th>IF ...</th> <th>THEN ...</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> history of penicillin / β lactam allergy recurrent pharyngitis/tonsillitis failure of therapy or current therapy with erythromycin, clarithromycin, azithromycin or clindamycin at physician request </td> <td> <ul style="list-style-type: none"> Perform susceptibility testing according to reporting chart </td> </tr> <tr> <td> <ul style="list-style-type: none"> None of the above </td> <td> <ul style="list-style-type: none"> Add comments &2109 &A373 </td> </tr> </tbody> </table>	IF ...	THEN ...	<ul style="list-style-type: none"> history of penicillin / β lactam allergy recurrent pharyngitis/tonsillitis failure of therapy or current therapy with erythromycin, clarithromycin, azithromycin or clindamycin at physician request 	<ul style="list-style-type: none"> Perform susceptibility testing according to reporting chart 	<ul style="list-style-type: none"> None of the above 	<ul style="list-style-type: none"> Add comments &2109 &A373
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Streptococcus pyogenes, Continued

Note
(continued)

Urine	IF ...	THEN ...
	<ul style="list-style-type: none"> history of penicillin / β lactam allergy at physician request 	Perform susceptibility testing according to reporting chart
	None of the above	Add comments &2162 &A373
Other specimen sources	Refer to specific bench protocols for susceptibility testing requirements. <ul style="list-style-type: none"> If indicated in bench protocol add comment &Str1 If co-isolated with organisms where TMP-SMX is routinely reported, add comment &A373 	

LIS Code...	Translation...
&Str1	Antibiotic susceptibility testing is not routinely performed. This organism is predictably susceptible to penicillin and other beta-lactam antibiotics. Susceptibility to clindamycin is variable.
&2109	Antibiotic susceptibility testing is not routinely performed. This organism is predictably susceptible to penicillin and other beta-lactam antibiotics. Susceptibility to erythromycin and clindamycin is variable.
&2162	This organism is generally susceptible to beta lactam antibiotics.
&A373	Trimethoprim-sulfamethoxazole has unpredictable activity against this organism.

Special considerations

<u>Ampicillin/ Penicillin/ Vancomycin:</u>	<p><i>S. pyogenes</i> should be susceptible to these antibiotics. Consult Supervisor if not susceptible.</p> <p>If 'nonsusceptible', the organism ID and susceptibility should be confirmed by repeat testing. If confirmed, consider submitting isolate to a reference laboratory.</p>
<u>Cefotaxime/ Ceftriaxone:</u>	<p><i>S. pyogenes</i> should be susceptible to these antibiotics. Consult Supervisor if not susceptible.</p> <p>If 'nonsusceptible', the organism ID and susceptibility should be confirmed by repeat testing. If confirmed, consider submitting isolate to a reference laboratory.</p> <p>If patient ≤ 1 month report cefotaxime only. If patient $> 1-3$ months report cefotaxime and ceftriaxone. If patient > 3 months report ceftriaxone only.</p>

Streptococcus pyogenes, Continued

Special considerations

<u>Clindamycin:</u>	If clindamycin S/I and erythromycin I/R this may indicate inducible resistance.	
	IF...	THEN....
	VITEK2 ICR is positive	<ul style="list-style-type: none"> • Report clindamycin R • Add comment: “This isolate is presumed to be resistant to clindamycin based on detection of inducible clindamycin resistance.” #A140
VITEK2 ICR is negative	<ul style="list-style-type: none"> • Report clindamycin as tested 	
	If clindamycin I/R and erythromycin S confirm results. This may represent a rare mechanism of resistance. <ul style="list-style-type: none"> • Confirm clindamycin and erythromycin by disc diffusion and D test. • If VITEK2 results confirmed report as tested. • If discrepancy between VITEK2 and disc diffusion results consult Supervisor 	
<u>Erythromycin:</u>	For throat isolates: <ul style="list-style-type: none"> • Add comment: “Erythromycin susceptibility result applicable to azithromycin and clarithromycin.” (23355) 	

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 **Streptococcus spp. β-Hemolytic Group**