



## Sentinel Antibiotic Susceptibility Prevalence Studies for Groups A and B Streptococci

Sentinel antibiotic susceptibility prevalence studies for groups A and B streptococci are performed at least biannually by the Laboratory Alliance Microbiology Department to monitor the emergence of resistance to select antimicrobial agents, namely penicillin, erythromycin, and clindamycin. Group A and group B streptococcal isolates were recovered from patient specimens from various physician practices and/or area hospitals throughout Onondaga County so that the results would not be biased by geographic location or physician practice specialty. The following highlights the results of these studies.

### Group A streptococcal study results

From April 14, 2017 to May 4, 2017, 50 isolates of group A streptococci (GAS) recovered from adult and pediatric pharyngeal specimens were randomly selected for testing against penicillin, erythromycin, and clindamycin. As expected, all 50 isolates (100%) were susceptible to penicillin but, notably, only 96% of the GAS were susceptible to erythromycin and 100% were susceptible to clindamycin. In the past, this resistance has appeared to correlate with increased use of azithromycin. As there can be cross-resistance between macrolides and clindamycin, there may not have been overuse of clindamycin. Since the percent of isolates susceptible is higher than 2016, the prescription use of macrolides may have decreased this year compared to the past year.

Chart 1 and Table 1 show the comparative results of the GAS antibiotic sentinel studies.

Chart 1

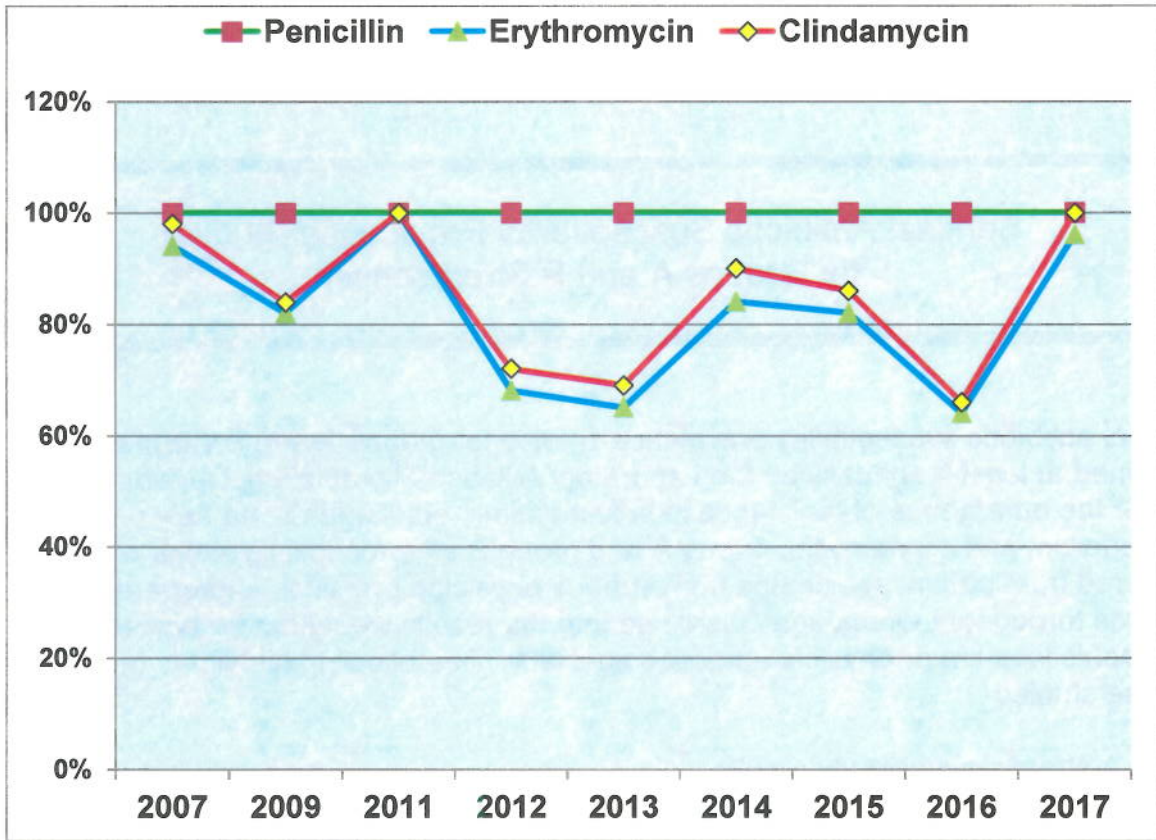


Table 1

Year	Antibiotic Tested (% Susceptible)		
	Penicillin	Erythromycin	Clindamycin
2007	100%	94%	98%
2009	100%	82%	84%
2011	100%	100%	100%
2012	100%	68%	72%
2013	100%	65%	69%
2014	100%	84%	90%
2015	100%	82%	86%
2016	100%	64%	66%
2017	100%	96%	100%

The 2017 susceptibility patterns for erythromycin and clindamycin represented a decreased resistance than was detected for these antibiotics over the last sentinel study period of 2016, which had shown decreasing susceptibility to both macrolides and clindamycin as compared to 2014 and 2015.

**The results of this limited sentinel study indicate that penicillin continues to be effective therapy for the treatment of GAS pharyngitis in the non-penicillin allergic patient and that erythromycin and clindamycin may be effective alternative therapeutic choices in the penicillin-allergic patient, but only when the results of susceptibility testing are available to verify the effectiveness of these drugs.** This antibiotic susceptibility trend will be monitored and tracked by performing periodic sentinel studies.

### Group B streptococcal study results

A similar antibiotic susceptibility prevalence study was performed on 50 randomly selected group B streptococci (GBS) recovered from vaginal specimens requested for Group B Strep from women of childbearing age over a similar time period. Chart 2 and Table 2 show the comparative results for the sentinel studies conducted for various years ranging from 2007 to 2017.

Chart 2

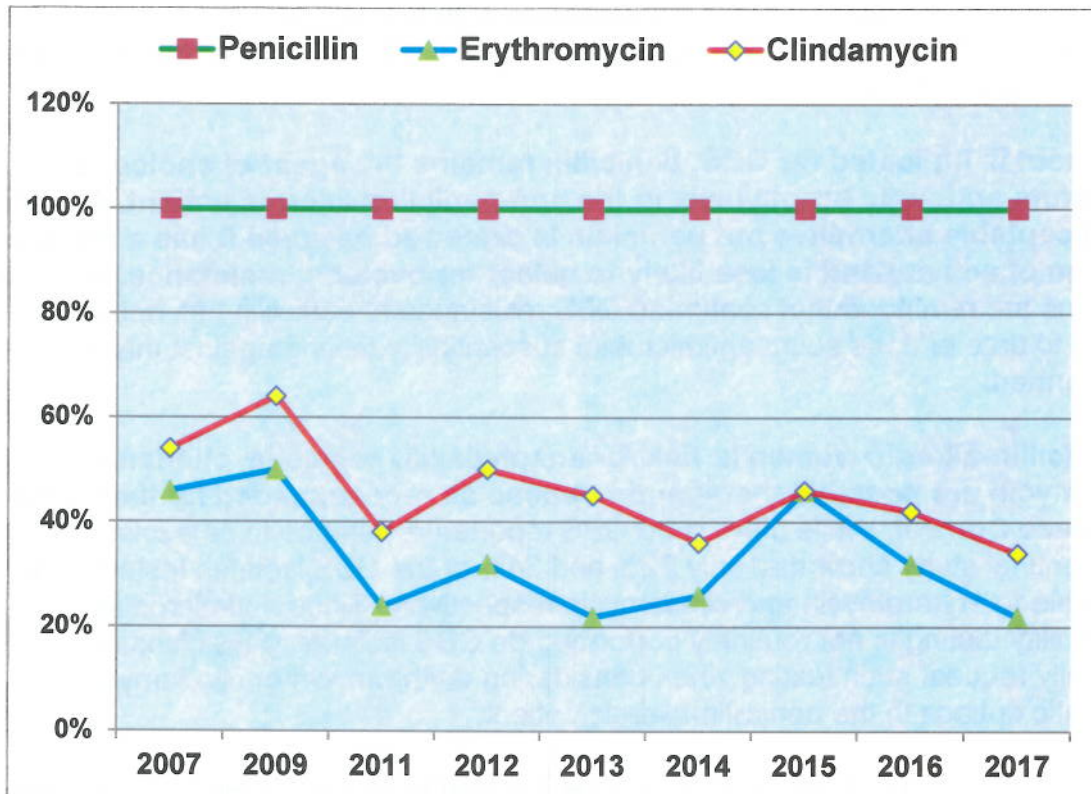


Table 2.

Year	Antibiotic Tested (% Susceptible)		
	Penicillin	Erythromycin	Clindamycin
2007	100%	46%	54%
2009	100%	50%	64%
2011	100%	24%	38%
2012	100%	32%	50%
2013	100%	22%	45%
2014	100%	26%	36%
2015	100%	46%	46%
2016	100%	32%	42%
2017	100%	22%	34%

As expected, all GBS isolates were susceptible to penicillin. However, an alarming and continued significant increased resistance to erythromycin and clindamycin was noted with only 22% and 34% of the GBS isolates tested susceptible to these respective antibiotics. Although erythromycin and clindamycin are the recommended antibiotics of choice for the treatment of GBS vaginal colonization or infection in the penicillin-allergic patient, this astounding increase in resistance to erythromycin and clindamycin may be due to the increased use of these antibiotics to treat GBS colonized or infected patients who are not penicillin allergic.

**If treatment is indicated for GBS, penicillin remains the agent of choice for intrapartum antibiotic prophylaxis in the non-penicillin allergic patient. Ampicillin is an acceptable alternative but penicillin is preferred because it has a narrower spectrum of activity and is less likely to select for bacterial resistance.** Importantly, physicians are reminded that confirmed GBS resistance to penicillin has not been reported to date and, as such, antimicrobial susceptibility testing against this agent is not performed.

**For penicillin-allergic women at risk for anaphylaxis, cefazolin, clindamycin, and erythromycin are possible therapeutic options as recommended by the Centers for Disease Control.** While there is no GBS reported resistance to cefazolin, the results of this sentinel study show that only 22% and 34% of the GBS isolates tested were susceptible to erythromycin and clindamycin respectively. Since antimicrobial susceptibility testing is not routinely performed on GBS isolates, physicians may specifically request such testing when considering erythromycin or clindamycin as therapeutic options in the penicillin-allergic patient.

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