Impact of Modified Nonmeningeal Interpretive Criteria (NCCLS M100-S12) for *S. pneumoniae* (SPN): Perceived Susceptibility Patterns of Five Parenteral Cephalosporins (CEPH)

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**Abstract**

This study compared the susceptibility rates for five antimicrobial agents by year of sample as well as using summary data from Sahm et al. [3]. The data showed a clear trend towards increased interpretive criteria over the 5-year period for all agents except vancomycin. A comparison of the ‘All years’ SENTRY Program data with that from the earlier publication [6] shows a considerable increase in the results for cefotaxime but not for ceftriaxone.

**Results:**

1. The influence of interpretive criteria (susceptible-, intermediate-, resistant-P) on the susceptibility of the four parenteral cephalosporins with interpretive criteria (cefuroxime, ceftriaxone, cefepime and ceftazidime) against *S. pneumoniae* and *S. pyogenes* is shown in Table 2. All penicillin-S strains of *S. pneumoniae* were >99% susceptible to all listed cephalosporins. An activity of >97.5% was maintained for all cephalosporins except ceftazidime (52.2%) against penicillin-I strains. Against penicillin-R strains, cefalotine had the best activity (only 0.3% of strains being resistant) with resistance rates of 8.3, 8.7, and 9.9% for cefotaxime, ceftriaxone, and cefepime, respectively.

2. In vitro activity of cefuroxime was inferior to cefalotine, ceftriaxone and cefepime for all categories of penicillin susceptibility, with only 34% of penicillin-R strains being susceptible to this antimicrobial agent.

3. The in vitro activity of erythromycin was inferior to cefepime, ceftriaxone and cefalotine for all categories of penicillin susceptibility, with only 34% of penicillin-R strains being susceptible to this antimicrobial agent.

4. Carbapenem activity against *S. pneumoniae* is shown in Table 6. The best activity was presented by the imipenem-cilastatin combination (100% susceptible) followed by meropenem (98.2% susceptible). Against penicillin-R strains, meropenem had the best activity (69.7% susceptible) with resistance rates of 8.7, 9.9, and 9.9% for cefotaxime, ceftriaxone, and cefepime, respectively.

**Conclusions:**

1. Overall, our results confirm and significantly expand those reported earlier [5] to all clinically relevant parenteral cephalosporins having potencies versus *S. pneumoniae*, with all tests using reference MIC methods. The implementation of the changes in MIC breakpoints published in NCCLS M100-S12 (2004) will provide a clearer picture of the clinical merits of these cephalosporins and some other lactams, and based on their true breadth of activity will encourage the more rational use of these agents in the treatment of various types of pneumococcal infections.

2. Continued surveillance of these declining susceptibility patterns, however appears to be a prudent practice.