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## **Vancomycin Ototoxicity: A Re-Evaluation in an Era of Increasing Doses.**

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**Background:** Nephrotoxicity and ototoxicity have historically been documented as relatively rare complications of vancomycin monotherapy. Recent reports have linked more aggressive vancomycin dosing strategies to significant risks of nephrotoxicity. We evaluated the rate of high frequency hearing loss detected by audiometry for patients on vancomycin therapy. **Methods:** Retrospective case-control analysis of audiometry results for patients with available baseline exams and follow-up exams on vancomycin therapy. **Results:** Analysis of 89 patients with audiograms performed after an average of 27 days of vancomycin therapy showed a 12% rate of high frequency hearing loss, with a trend on univariate analysis towards a higher rate with advanced age. The mean of the highest vancomycin trough for both patients with worsening and those without worsening audiograms was 19 mg/L. Regression tree modeling identified that of patients aged < 53 years, the incidence was 0% while for patients  $\geq$  age 53 years, the rate of high frequency hearing loss detected on audiogram was 19% ( $p=0.008$ ). **Conclusions:** A significant rate of high frequency hearing loss was detected by audiometry in older patients receiving vancomycin monotherapy. While these data should raise caution against continued indiscriminate vancomycin dose escalation to treat infections caused by *S. aureus* with vancomycin MIC's of 2 mg/L, further prospective studies are needed to determine the clinical significance and reversibility of these effects.

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