Since the introduction of the glycopeptide antibiotic vancomycin in the late 1950s, this agent has attained widespread use in pediatrics. Vancomycin is the drug of choice in the treatment of methicillin-resistant staphylococcal infections and enterococcal and pneumococcal isolates resistant to beta-lactam antibiotics. Dose-related adverse drug reactions are very similar to those seen with AGs, especially nephrotoxicity (associated with serum trough levels above 20 mg/L). Unfortunately, the data supporting a cause-and-effect relationship between serum levels of the drug and either its efficacy or its reported toxicities are not terribly convincing. Nonetheless, peak serum vancomycin levels should be obtained 2 to 3 hours following a 30- to 60-minute infusion to allow the antibiotic to distribute fully among tissue compartments. Respective peak and trough serum drug concentrations of 25 to 40 mg/L and 5 to 10 mg/L have been shown to maximize efficacy and minimize toxicity.

The monitoring of serum antibiotic drug levels and the dosage manipulations oftentimes required in response to these values are not as complicated as they appear. If the patient and the numbers are approached systematically and consistently, patients will receive optimal antibiotic therapy with minimal risk of toxicity.

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Comment: Another article in the "In Brief" series (see Pediatrics in Review, 1995;16:357) focuses on vancomycin, and as I note in that Comment, the emergence of antibiotic-resistant Strepococcus pneumoniae is complicating our initial choice of drug when we suspect serious bacterial infection in a child. Not only are we, by necessity, becoming more familiar with vancomycin, but we also may find ourselves dusting off chloramphenicol, which newer and less toxic agents were relegating to a back shelf in our memory (at least in the United States). Like vancomycin, chloramphenicol can be active against pneumococci resistant to penicillins and cephalosporins. If we are going to use these antibiotics, we should use them as safely and as effectively as possible. Learning how to monitor levels properly for both toxicity and efficacy is worthwhile to us and to our patients.

Henry M. Adam, MD
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