

## Daptomycin

### A Viewpoint by Richard Quintiliani

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Of growing concern is the increasing resistance to antimicrobials among common organisms. Ubiquitous organisms such as *Streptococcus pneumoniae* and *Staphylococcus aureus* have become widely resistant to penicillins, cephalosporins, macrolides, tetracyclines and cotrimoxazole (trimethoprim/sulfamethoxazole). As a result of this 'arms race' between bacteria and antibacterials, the need for optimal treatment strategies, as well as the use of newer antibacterials is becoming increasingly urgent. This situation is particularly urgent in the management of methicillin-resistant *S. aureus* (MRSA), which has become typically resistant to all antibacterials except vancomycin and linezolid. In fact, even with these two antibacterials, some problems have already appeared, such as isolates of *S. aureus* that have tested both intermediate and highly resistant to them.

Daptomycin, a cyclic lipopeptide, is an entirely new agent that rivals both vancomycin and linezolid in microbiological activity against MRSA and other Gram-positive cocci, such as *S. pyogenes*, *S. agalac-*

*tiae*, group C and G  $\beta$ -haemolytic streptococci and vancomycin-susceptible *Enterococcus faecalis*. In fact, it has potential advantages in that it can be given once daily, exhibits rapid bactericidal action and, unlike vancomycin, has no nephrotoxicity or ototoxicity potential and, unlike linezolid, has not been associated with thrombocytopenia.

Of potential concern with daptomycin is its occasional association with elevation in creatine phosphokinase (CPK) levels in patients and volunteers that have resulted in transient muscle weakness and myalgia. However, the frequency in clinical trials of this adverse reaction has been no greater for daptomycin than comparators (semi-synthetic penicillin, vancomycin). Nevertheless, in patients receiving this agent for periods of >1 week, weekly CPK determinations should be obtained. The need for monitoring tests is no different from that of vancomycin (where serum vancomycin levels and renal function tests should be obtained regularly) or of linezolid (where weekly platelet counts should be obtained in patients on prolonged therapy). Since there is no cross-reaction between daptomycin and these other antimicrobials, daptomycin represents another welcome addition to the choices of agents to treat MRSA and other Gram-positive cocci. ▲