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Panipenem/Betamipron
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The carbapenem panipenem has potent and broad-spectrum bactericidal activity against numerous pathogens including organisms such as *Streptococcus pneumoniae* and *Haemophilus influenzae* causing respiratory tract infections. After administration, panipenem is widely distributed and penetrates well into tissues such as the lungs (mainly extracellular fluids), and into body fluids such as sputum.

Although panipenem is generally less active than imipenem and meropenem against *Pseudomonas aeruginosa*, it is known that panipenem shows much stronger activity in low amino-acid media and biological fluids than in Mueller-Hinton medium. This is because in minimal media panipenem encounters less competition with basic amino acids for penetration through the OprD channel in the outer bacterial membrane.

S. pneumoniae is one of the most important pathogens in respiratory tract infections. Recently, the incidence of infections with penicillin-resistant *S. pneumoniae* (PRSP) has been increasing and treatment is becoming difficult. Mortality is high in paediatric patients with PRSP infections, and it is crucial to treat them with appropriately and accurately selected antibiotics. Panipenem shows the most potent activity against PRSP among available carbapenems. Considering the increasing incidence of PRSP infections in Japan, Asia and the West, it is recommended that panipenem/betamipron be added to the empirical therapy of respiratory tract infections and meningitis. ▲