

# Empirical Carbapenems in Severe Pediatrics Infectious Diseases: **Pro**

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# Characteristics of Carbapenems

	Imipenem	Meropenem	Ertapenem	Doripenem
<b>FDA approval</b>	1985	1996	2001	2007
<b>Age approved</b>	Neonate-adult	>3 months	>3 months	>18 years
<b>Administration</b>	IV	IV	IV	IV
<b>Duration of infusion</b>	20-60 min	15-30 min	30 min	60 min
<b>Frequency</b>	6-8 hrs	8 hrs	24 hrs	8 hrs
<b>IM</b>	yes	no	yes	no
<b>Half life</b>	~ 1h	~1h	~4h	~1h
<b>Protein binding</b>	13-20%	2-10%	85-95%	9%
<b>Renal excretion</b>	70%	70%	80%	60-75%
<b>C max (mg/L)</b>	12-20	23	155	23
<b>Stability</b>	~4h	~6h	~6h	~12h

# Empirical carbapenems in severe pediatrics infectious diseases



- ❖ The use of carbapenems for serious bacterial infections has been reviewed previously.<sup>1-4</sup>
  
- ❖ **Factors to consider:**
  - Pharmacological properties
  - Clinical efficacy

<sup>1</sup> Hurst M, Lamb HM. Drugs 2000; 59: 653-80.

<sup>2</sup> Lowe MN, Lamb HM. Drugs 2000; 60: 619-46.

<sup>3</sup> Wiseman LR, Wagstaff AJ, Brogden RN, et al. Drugs 1995; 50: 73-101.

<sup>4</sup> Lamb HM, Goa KL. Dis Manage Health Outcomes 1999; 5: 101-15.

# Pharmacological properties



- ❖ **Broad spectrum with activity against gram-positive, gram-negative, and anaerobe bacteria.**
  - ❖ **Pathogens known to be resistant to carbapenems:**
    - **Methicillin-resistant *Staphylococcus aureus* (MRSA)**
    - ***Enterococcus faecium***
    - ***Stenotrophomonas maltophilia***
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# Antibacterial activity against

# gram-positive bacteria

- ❖ *E. faecalis*
- ❖ *S. epidermidis*
- ❖ Viridans group streptococci
- ❖ Methicillin-susceptible *S. aureus* (MSSA)
- ❖ *S. pneumoniae* (including penicillin-resistant isolates)

MIC90 values of **0.25-2 mg/L**  
and  
Susceptibility rates of **95.3-100%**