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Title: Pharmacokinetics and pharmacodynamics of newer fluoroquinolones in patients with lower respiratory tract infections

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Body: Introduction: Levofloxacin (LVF) and moxifloxacin (MXF), have been recommended as first line therapy for patients with acute exacerbations of chronic bronchitis and community-acquired pneumonia. Aim: The aim of this study is to evaluate the pharmacokinetic (PK) and pharmacodynamic (PD) parameters of LVF and MXF for lower respiratory tract infections (LRTI). Methods: Eighteen patients (2 groups of 9, aged 69.6±8.7 and 74±8.8) with LTRI received 500 mg LVF IV q12h or 400 mg MXF IV q24h. Serial blood samples were obtained at steady state condition (3rd day of therapy). Plasma concentrations were determined by a validated HPLC method. The PD target was evaluated for both antibiotics based on our hospital's MIC_{90} of the most common respiratory pathogens. Results: The PK data are presented in Table 1.

Table 1.

	Cmax (μg/mL)	AUC24 (hr*μg/mL)	CL (L/hr)	T1/2 (h)	Vss (L)
LVF	6.26±1.02	53.98±18.97	20.5±7.8	9.49±6.14	208.6±87.7
MXF	4.86±1.1	38.02±5.57	10.7±1.3	14.52±6.95	171.9±66.8

PK data.

Both antibiotics exhibited large volumes of distribution (Vss). They achieved the PD target in all patients against the majority of strains of the commonest respiratory pathogens in our hospital, as shown in table 2.

Table 2

	AUC/MIC (S. pneumoniae)	AUC/MIC (H. influenzae)	AUC/MIC (M. catarrhalis)
LVF	AUC/0.5	AUC/0.03	AUC/0.06

	107.97±37.94	1799.47±632.25	899.74±316.13
MXF	AUC/0.25	AUC/0.006	AUC/0.006
	152.08±22.27	633.68±92.78	633.68±92.78
	p=0.005	p<0.001	p=0.102

PD data

Conclusions: LVF and MXF exhibit a favorable PK profile in patients with LRTI. There is adequate PD exposure against most strains of S. pneumoniae, H. influenzae and M. catarrhalis with low MICs.