Background
Delafloxacin, a novel fluoroquinolone, has activity against Gram-negative bacteria including methicillin-resistant Staphylococcus aureus (MRSA), and against susceptible Gram-negative organisms. Delafloxacin is currently in Phase I development for MRSA- and MRGN-infected patients

Methods
Clinical Study Design
This was a phase I, single-dose, open-label, randomized, 2-period, 2-sequence crossover study in 56 healthy subjects. Subjects were all of the eligible, randomized patients assigned to receive 1 injection of oral delafloxacin 450 mg once and 1 single dose of oral delafloxacin 450 mg tablet. Treatment A and IV infusion 450 mg delafloxacin 1 hour within sequence as a random effect. The study consisted of a screening period (Day -28 to -2), a study Day (1 of each period), 3 treatment periods (Day 2 to 3), and follow-up periods (Day 4 to 28) for each treatment. Safety assessments were performed by blinded assessors (HLA clinical laboratory). Safety parameters included clinical laboratory parameters (hematology, chemistry, liver function tests, urinalysis, ECG, vital signs, body temperature, weight, and body mass index). Delafloxacin plasma samples were collected before dosing and at 0.25, 0.5, 0.75, 1, 1.25, 1.5, 2, 4, 6, 8, 12, 24, 48, and 72 hours after dosing.

Bioanalytical
Delafloxacin in plasma was quantitated using a validated LC-MS/MS method. Plasma samples for delafloxacin analysis were processed by SLE extraction. The processed samples were analyzed by an LC-MS/MS method with a calibration range of 5 to 5000 ng/mL.

Pharmacokinetic Analysis
Pharmacokinetic parameters estimated included Cmax, Tmax, AUC(0–t), AUC(0–∞), tau, and Cl. All samples were stored at -70°C.

Results
Table 3. Summary of Subject Demographics and Baseline Characteristics (All Subjects)

Table 4. Mean (±SD) Plasma Concentrations of Delafloxacin (450-mg Oral and 450-mg IV Treatments) Versus Time (Pharmacokinetic Population)

Conclusions
• Equivalence in total exposure of delafloxacin was concluded since the 99% CI of the geometric mean ratios was within the predefined criterion interval of 0.80 to 1.25 for AUC0–t and Cmax.
• Median T1/2 of delafloxacin occurred at 0.82 hour. Following the administration of the 450-mg tablet at 1.0 and 2.0 hours following 300 mg infused over 1 hour.
• 16 TEAEs were reported and 11 of 56 subjects (19.6%) experienced at least 1 TEAE. The most frequently reported TEAE overall was headache followed by diarrhea. All TEAEs were considered either possibly-related or unclassified.
• Overall, the tolerability of delafloxacin was assessed to be adequate, and no significant safety issues were observed in the overall population.

References