Pharmacokinetic Response after Subcutaneous Administration of Ceftriaxone
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Introduction
Subcutaneous administration of ceftriaxone may offer a more convenient and safer alternative to IV administration. This was a randomized, partially blinded, three-period crossover study in 18 healthy male and female subjects. Three treatments were compared:
- 1 g administered subcutaneously over 2 hours
- 1 g administered IV over 30 minutes
- 2 g administered subcutaneously over 2 hours
The primary endpoint for the study was non-inferior antimicrobial coverage (time over MIC) when compared to the same dose given by intravenous infusion.

Results
Ceftriaxone exposure following subcutaneous 2-hour infusion of 1 gram was similar to that of the standard IV infusion over 30 minutes.
- Mean plasma concentrations after IV administration were comparable to concentrations reported in the package insert.
- The geometric mean absolute bioavailability following subcutaneous administration was 107.66%
- Antibacterial coverage (time of MIC) was equivalent with geometric mean ratio of 109.68%

These results support that the 1g subcutaneous infusion treatment of ceftriaxone is non-inferior to the currently approved 1 g IV infusion treatment.

Conclusion
Subcutaneous infusion of 1 gram ceftriaxone over 2 hours results in complete bioavailability (107.66%) and equivalent antimicrobial coverage when compared to IV administration over 30 minutes. The study met predefined non-inferiority criteria for antimicrobial coverage (time over MIC). SC administration of ceftriaxone offers a novel delivery mode for treatment of susceptible infections without the need for vascular access.