St Vincent's Hospital / SydPath
Drug Measurement Information Sheet

Ciprofloxacin

Quinolone antibiotic: bactericidal, inhibits DNA gyrase
Active against: many Gram-negative bacteria **excluding** *Burkholderia spp*, *Stenotrophomonas maltophilia*, resistant *Neisseria gonorrhoeae* and *Campylobacter spp*., resistant *Salmonella* and *Shigella spp.* and urinary isolates of *Enterococcus faecalis*. *In vitro* activity against MSSA and some MRSA but there is a risk of resistance developing during treatment. Also active against Chlamydia and *Chlamydophila spp*, *Legionella spp.* and *Mycoplasma spp.*

WHEN TO CONSIDER TDM

Consider in critically ill patients, especially those with sepsis, trauma, or burns. Consider for prolonged courses of therapy or deep-seated infections.

PHARMACOKINETICS
(may be altered in critical illness and organ dysfunction)

Absorption	PO – 78% (range 53-99%)
Protein binding	20 - 40%
Clearance	Unchanged in urine approx. 60%
Elimination t½	3-4 hours – healthy volunteers 8 hours – end stage renal failure

SAMPLE COLLECTION TIME

A PEAK concentration one hour after an oral dose or 10 minutes after an intravenous dose must be collected after third dose following initiation or dose change **(note this differs from most other antimicrobial agents where a trough concentration is collected)**

REQUESTING & COLLECTION

Collect 4 mL in a purple top (EDTA) tube (no gel separator).
Important information required on request form:

1) **Time and date and quantity of all doses given**
2) **Time of blood sample collection**

HANDLING & TRANSPORT

The sample must be delivered to laboratory within 1 hour of collection.
If not delivered to the lab within this time, centrifuge, separate plasma and freeze within 3 hours of collection.

AVAILABILITY

Test generally performed 5 days a week.
Specific days and timing should be confirmed with SydPath.

REFERENCE INTERVALS

Suggested Therapeutic Targets:
Empirical therapy: Peak 16-48 mg/L (based on EUCAST breakpoints)
Directed therapy: AUC/MIC >250 [4], peak/MIC > 8 for *P. aeruginosa* bacteraemia [5], AUC/MIC >250 for *Enterobacteriaceae* bacteraemia [6],
Toxic Range: None defined

CONTACT

Patient Results: (02) 8382 9100
Further information: www.sydpath.com.au - Test Database

INSTRUCTIONS FOR REFERRING LABORATORIES

Centrifuge, separate plasma within 3 hours of collection, store and transport plasma frozen.

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References:

[1] Australian Medicines Handbook.

[2] Lettieri JT, Rogge MC, Kaiser L, Echols RM, Heller AH. (1992) Pharmacokinetic profiles of ciprofloxacin after single intravenous and oral doses. Antimicrob Agents Chemother. 36(5):993-6.

[3] Vance-Bryan K, Guay DR, Rotschafer JC. (1990) Clinical pharmacokinetics of ciprofloxacin.Clin Pharmacokinet. 19(6):434-61.

[4] Forrest A, Nix DE, Ballow CH, Goss TF, Birmingham MC, Schentag JJ. (1993) Pharmacodynamics of intravenous ciprofloxacin in seriously ill patients. Antimicrob Agents Chemother. 37(5):1073–81.

[5] Zelenitsky SA, Harding GK, Sun S, Ubhi K, Ariano RE. (2003) Treatment and outcome of Pseudomonas aeruginosa bacteraemia: an antibiotic pharmacodynamic analysis. J Antimicrob Chemother. 52(4):668–74.

[6] Zelenitsky SA, Ariano RE. (2010) Support for higher ciprofloxacin AUC 24/MIC targets in treating Enterobacteriaceae bloodstream infection. J Antimicrob Chemother. 65(8):1725–32.