

Cefpirome

Introduction: Cefpirome sulphate for injection is a semisynthetic fourth generation cephalosporin intended for intravenous administration. Cefpirome is highly active against a wide range of gram +ve and gram -ve organisms. Cefpirome is a frequently administered antibiotic in the initial empirical therapy of patients experiencing severe or life-threatening infections.

Mechanism of action: Cefpirome binds to one or more of the penicillin-binding proteins (PBPs) which inhibits the final transpeptidation step of peptidoglycan synthesis in bacterial cell wall, thus inhibiting biosynthesis and arresting cell wall assembly resulting in bacterial cell death.

Indications: Hospital and community-acquired infections caused by bacterial organisms sensitive to cefpirome. Lower respiratory tract infections (bronchopneumonia, lobar pneumonia); complicated upper (pyelonephritis) and lower urinary tract infections; skin and soft tissue infections (cellulitis wound infections); bacteraemia/septicaemia and severe infections in intensive care patients; infections in neutropenic and immunocompromised patients.

Pharmacology:

Bioavailability and Absorption: Bioavailability after i.m. administration is greater than 90%.

Distribution: The average peak (C_{5min}) serum level after single i.v. doses of 1.0g was 80-90 mg/L. Pharmacokinetics were dose linear. The volume of distribution was 14-19L. No accumulation was seen after multiple dosing. The elimination half-life in serum was 1.8-2.2h. Serum protein binding was less than 10% and was dose independent.

Biotransformation and Excretion: Cefpirome was principally eliminated by the kidney; 80-90% of the administered drug was recovered in the urine. Radioactive counts recovered in the urine consisted of 98-99% unchanged cefpirome. Approximately 30% of a 1.0g dose was eliminated by haemodialysis.

Dosage: The following dosages are recommended for moderate to severe infections in patients with normal renal function:

Indication	Dose (g)	Interval (hours)	Total Daily Dose (g)
Complicated upper & lower urinary tract infections	1.0	12	2.0
Skin & soft tissue infections	1.0	12	2.0

Lower respiratory tract infections	1.0 or 2.0	12	2.0 or 4.0
Bacteraemia/septicaemia; severe infections in intensive care patients	2.0	12	4.0
Infections in neutropenic/ immunocompromised patients	2.0	12	4.0

For urinary tract and skin and soft tissue infections, the unit dose may be increased to 2.0g in very severe cases.

Dosage in Patients with Impaired Renal: Cefpirome is excreted principally by the kidney. The dose must therefore be reduced in patients with impaired renal function to compensate for the slower excretion.

Dosage in Elderly Patients: No adjustment is required unless renal impairment is present.

Side effects: Rash, pruritus, urticaria; nausea, vomiting, abdominal pain, diarrhoea; increased plasma levels of ASAT, ALAT, gamma-GT, LDH, bilirubin and/or alkaline phosphatase; interstitial nephritis, acute renal failure; thrombocytopenia, eosinophilia, haemolytic anaemia, neutropaenia, agranulocytosis; thrombophlebitis, pain at Inj site; convulsions, fever; haemorrhage.

Hypersensitivity Reactions: Angio-oedema, bronchospasm, malaise, possibly culminating in shock, may rarely occur.

Cutaneous: Rash, pruritus, urticaria. As with other cephalosporins, isolated cases of bullous eruptions (erythema multiforme, Stevens-Johnson syndrome, toxic epidermal necrolysis) have been reported.

Effects on the Gastrointestinal Tract: Nausea and vomiting, abdominal pain, diarrhoea. The possibility of pseudomembranous colitis should be considered in patients in whom severe, persistent diarrhoea occurs during treatment or in the initial weeks thereafter.

Effects on Liver Function: Increased plasma levels of ASAT, ALAT, gamma-GT, LDH, bilirubin and/or alkaline phosphatase. These laboratory abnormalities, which may also be explained by the infection, may rarely exceed twice the upper limit of normal range and elicit a pattern of liver injury, usually cholestatic and most often asymptomatic.

Effects on Renal Function: Slight increases in serum creatinine were observed in clinical trials, but were only rarely a reason for discontinuing treatment. Interstitial nephritis has been observed in rare instances during treatment with other cephalosporins and the possibility of its occurrence with cefpirome should be borne in mind. Acute renal failure may occur in rare cases.

Changes in Blood Constituents: Thrombocytopenia; eosinophilia; very rarely, haemolytic anaemia. As with other β -lactam antibiotics, neutropenia and, more

rarely, agranulocytosis may develop during treatment with cefpirome, particularly if given over long periods. For courses of treatment lasting longer than 10 days, the blood count should therefore be monitored.

Local Reactions: Phlebitis, thrombophlebitis and pain at the site of injection.

Central Nervous System: Very few cases of convulsions have been reported. Reversible encephalopathy (eg. impairment of consciousness, abnormal movements, convulsions) may occur with high doses of β -lactams including cefpirome, especially in patients with renal insufficiency

Cardiovascular System: Haemorrhage, ecchymosis, altered rhythm.

Respiratory: Dyspnoea.

Body as A Whole: Malaise, superinfection.

Others: Headache, fever, taste and/or smell disturbances shortly after injection.

Precautions: This product should not ordinarily be given to those known to be allergic to penicillin or to cephalosporins especially if they have experienced an allergic or urticarial reaction.

Superinfection: As with other antibiotics, the use of cefpirome, especially if prolonged, may result in overgrowth of non-susceptible organisms, including fungi. Repeated evaluation of the patient's condition is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Pregnancy and Lactation: The safety of this medicinal product for use in human pregnancy has not been established. Cefpirome should, therefore, not be used during pregnancy.

Nursing mothers: Nursing mothers should not be treated with cefpirome

Contraindications:

Absolute: Hypersensitivity to cephalosporins

Relative: Possibility of cross-sensitivity in patients hypersensitive to penicillin.

How supplied: Customized as per request.