

**CEFUROXIME 750MG POWDER FOR INJECTION OR
INFUSION**

PL 20117/0008

CEFUROXIME 1.5G POWDER FOR INJECTION OR INFUSION

PL 20117/0009

UKPAR

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**CEFUROXIME 750MG POWDER FOR INJECTION OR
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PL 20117/0008

CEFUROXIME 1.5G POWDER FOR INJECTION OR INFUSION

PL 20117/0009

LAY SUMMARY

The MHRA today granted Morningside Healthcare Ltd Marketing Authorisations (licences) for the medicinal products Cefuroxime 750mg and 1.5g Powder for Solution for Injection or Infusion (PL 20117/0008-9). These are prescription-only medicines (POM).

Cefuroxime is an antibiotic, given for the treatment of infections including infections of the chest, ear, nose and throat; cystitis and kidney infections; skin, soft tissue, bone and joint infections; pelvic inflammatory diseases; septicaemia and meningitis and gonorrhoea. A doctor may also give it to you before an operation to protect you from infection.

No new or unexpected safety concerns arose from these applications and it was therefore judged that the benefits of taking Cefuroxime 750mg and 1.5g Powder for Solution for Injection or Infusion outweigh the risks, hence marketing Authorisations have been granted.

**CEFUROXIME 750MG POWDER FOR INJECTION OR
INFUSION**

PL 20117/0008

CEFUROXIME 1.5G POWDER FOR INJECTION OR INFUSION

PL 20117/0009

SCIENTIFIC DISCUSSION

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INTRODUCTION

Based on the review of the data on quality, safety and efficacy, the UK granted marketing authorisations for the medicinal products Cefuroxime 750mg and 1.5g Powder for Solution for Injection or Infusion to Morningside Healthcare Ltd on 5th April 2007. These products are prescription-only medicines (POM).

These applications were submitted as abridged applications according to Article 10.1 of Directive 2001/83/EC, claiming to be a generic medicinal product to Zinacef 750mg and 1.5g (PL 00004/0263) authorised in the UK to Glaxo Laboratories Ltd. These products were originally authorised in the UK in April 1978 so the 10-year period of data exclusivity has expired.

Cefuroxime is a bactericidal cephalosporin antibiotic which is resistant to most beta-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms. It is indicated for the treatment of infections before the infecting organism has been identified or when caused by sensitive bacteria. In addition, it is an effective prophylactic against post-operative infection in a variety of operations.

PHARMACEUTICAL ASSESSMENT

DRUG SUBSTANCE

Nomenclature

rINN: cefuroxime sodium

CAS: 56238-63-2

Chemical name: (Z)-(6R,7R)-3-(carbamoyloxymethyl)-7-[2-(2-furyl)-2-(methoxyimino)acetamido-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-sodium carboxylate

Structure

$C_{16}H_{15}N_4NaO_8S$

Molecular Weight: 446.4

White to off-white slightly hygroscopic powder. It is freely soluble in water and very slightly soluble in alcohol.

A valid Certificate of Suitability has been provided.

An appropriate specification based on the European Pharmacopoeia has been provided.

Analytical methods have been appropriately validated and are satisfactory for ensuring compliance with the relevant specifications.

Active cefuroxime sodium is stored in appropriate packaging. The specifications and typical analytical test reports are provided and are satisfactory.

Batch analysis data are provided and comply with the proposed specification.

Satisfactory certificates of analysis have been provided for working standards used by the active substance manufacturer and finished product manufacturer during validation studies.

Appropriate stability data have been generated supporting a retest period of 2 years.

DRUG PRODUCT

There are no excipients in the products.

No materials of animal or human origin are contained in or used in the manufacture of these products. TSE declarations have been provided to prove the only materials of animal origin used in the fermentation stage or other stages are milk-derived materials.

No overages are included

Impurity profiles

Impurity profiles for the drug product were found to be similar to that of the reference product.

Pharmaceutical Development

The objective of the pharmaceutical development programme was to produce products containing 750mg and 1.5g Cefuroxime that are tolerable and which could be considered as generic products to the originator products Zinacef Injection 750mg and 1.5g

The rationale for the type of pharmaceutical form developed and formulation variables evaluated during development have been stated and are satisfactory.

Manufacture

A description and flow-chart of the manufacturing method have been provided.

In-process controls are appropriate considering the nature of the product and the method of manufacture. Process validation has been carried out on batches of each strength. The results are satisfactory.

Finished product specification

The finished product specification is satisfactory. Acceptance limits have been justified with respect to conventional pharmaceutical requirements and, where appropriate, safety. Test methods have been described and have been adequately validated, as appropriate. Batch data have been provided and comply with the release specification. Certificates of analysis have been provided for any working standards used.

Container Closure System

Product is packaged in clear borosilicate Type I glass vials with grey chlorobutyl rubber stoppers with an aluminium overseal.. Specifications and Certificates of Analysis for all packaging used have been provided. This is satisfactory. All primary product packaging comply with EU legislation regarding contact with solutions for parenteral and ophthalmic use Directive 2002/72/EC (as amended).

Stability

Finished product stability studies have been conducted in accordance with current guidelines. Based on the results, a shelf-life of 2 years with storage conditions “Store below 25°C and “Keep container in the outer carton” have been set, which are satisfactory.

Conclusion

It is recommended that Marketing Authorisations are granted for these applications.

The requirements for essential similarity of the proposed and reference products have been met with respect to qualitative and quantitative content of the active substance, and pharmaceutical form. It was not necessary to demonstrate bioequivalence.

PRECLINICAL ASSESSMENT

No new preclinical data have been supplied with these applications and none are required for applications of this type.

CLINICAL ASSESSMENT

1. INTRODUCTION

These are national abridged standard applications for marketing authorisations for Cefuroxime 750mg and 1.5g Powder for Solution for Injection or Infusion. The applications are made in accordance with EC Article 10.1 of Directive 2001/83/EC, by Morningside Healthcare Ltd and claim to be a generic medicinal product to the brand leader products, Zinacef 750mg and 1.5g (PI 0004/0263) which is licensed to Glaxo Laboratories Ltd and has been licensed for over 10 years..

2. BACKGROUND

3. INDICATIONS

Cefuroxime is a bactericidal cephalosporin antibiotic which is resistant to most beta-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms. It is indicated for the treatment of infections before the infecting organism has been identified or when caused by sensitive bacteria. In addition, it is an effective prophylactic against post-operative infection in a variety of operations. Usually cefuroxime will be effective alone, but when appropriate it may be used in combination with an aminoglycoside antibiotic, or in conjunction with metronidazole, orally or by suppository or injection, (see Pharmaceutical precautions).

In situations where mixed aerobic and anaerobic infections are encountered or suspected (e.g. peritonitis, aspiration pneumonia, abscesses in the lung, pelvis and brain), or are likely to occur (e.g. in association with colorectal or gynaecological surgery) it is appropriate to administer cefuroxime in combination with metronidazole.

Most of these infections will respond to an i.v. regimen of cefuroxime injection (750mg) plus metronidazole (500mg/100ml) administered eight-hourly. In more severe or well established mixed infections, an i.v. regimen of cefuroxime (1.5g) plus metronidazole injection (500mg/100ml) eight-hourly may be indicated. For the prophylaxis of infection in surgery (e.g. colorectal and gynaecological) a single dose of 1.5g cefuroxime plus metronidazole injection (500mg/100ml) is appropriate. Alternatively this may be followed by two 750mg doses of cefuroxime plus metronidazole. Indications include:

Respiratory tract infections for example, acute and chronic bronchitis, infected bronchiectasis, bacterial pneumonia, lung abscess and post operative chest infections. Ear, nose and throat infections for example, sinusitis, tonsillitis and pharyngitis.

Urinary tract infections for example acute and chronic pyelonephritis, cystitis and asymptomatic bacteriuria.

Soft-tissue infections for example cellulitis, erysipelas, peritonitis and wound infections.

Bone and joint infections for example, osteomyelitis and septic arthritis.

Obstetric and gynaecological infections pelvic inflammatory diseases.

Gonorrhoea particularly when penicillin is unsuitable.

Other infections including septicaemia and meningitis.

Prophylaxis against infection in abdominal, pelvic, orthopaedic, cardiac, pulmonary, oesophageal and vascular surgery where there is increased risk from infection.

Where appropriate cefuroxime is effective when used prior to oral therapy in the treatment on pneumonia and acute exacerbations of chronic bronchitis.

4. POSOLOGY AND METHOD OF ADMINISTRATION

Intramuscular

Add 3ml water for injections to 750 mg cefuroxime. Shake gently to produce an opaque suspension.

Intravenous

Dissolve cefuroxime in water for injections using 6ml for 750mg. For short intravenous infusion (e.g. up to 30 minutes), 750mg may be dissolved in 25ml water for injections. These solutions may be given directly into the vein or introduced into the tubing of the giving set if the patient is receiving parenteral fluids.

General Recommendations

Adults: Many infections will respond to 750mg three times a day by IM or IV injection. For more severe infections, this dose should be increased to 1.5g three times a day IV. The frequency of IM or IV injection can be increased to six-hourly if necessary, giving total doses of 3g to 6g daily.

Where clinically indicated adults with pneumonia and acute exacerbations of chronic bronchitis have been shown to respond to 750mg or 1.5g twice a day, followed by oral therapy with cefuroxime axetil (see Sequential therapy).

Infants and Children: Doses of 30 to 100mg/kg/day given as three or four divided doses. A dose of 60mg/kg/day will be appropriate for most infections.

Neonates: Doses of 30 to 100mg/kg/day given as two or three divided doses. In the first weeks of life the serum half-life of cefuroxime can be three to five times that in adults.

Elderly: See dosage in adults.

Other Recommendations

Gonorrhoea:

1.5g should be given as a single dose. This may be given as 2 x 750mg injections into different sites e.g. each buttock.

Meningitis:

Cefuroxime is suitable for sole therapy of bacterial meningitis due to sensitive strains. The following dosages are recommended.

Infants and Children: 200 to 240mg/kg/day IV in three or four divided doses. This dosage may be reduced to 100mg/kg/day IV after three days or when clinical improvement occurs.

Neonates: The initial dosage should be 100mg/kg/day IV. A reduction to 50mg/kg/day IV may be made when clinically indicated.

Adults: 3g IV every eight hours. Data are not yet sufficient to recommend a dose for intrathecal administration.

Prophylaxis:

The usual dose is 1.5g IV with induction of anaesthesia for abdominal, pelvic and orthopaedic operations but may be supplemented with two 750mg IM doses eight and sixteen hours later. In cardiac, pulmonary, oesophageal and vascular operations the

usual dose is 1.5g iv with induction of anaesthesia continuing with 750mg IM three times a day for a further 24-48 hours

In total hip replacement 1.5g of cefuroxime powder may be mixed dry with each pack of methyl methacrylate cement polymer before adding the liquid monomer.

Sequential therapy:

Pneumonia:

1.5g twice a day (IV or IM) for 48-72 hours followed by 500mg twice a day cefuroxime axetil oral therapy for 7 days

Acute exacerbations of chronic bronchitis:

750mg twice a day (IV or IM) for 48-72 hours followed by 500mg twice a day cefuroxime axetil oral therapy for 5-7 days.

Duration of both parenteral and oral therapy is determined by the severity of the infection and the clinical status of the patient.

Dosage in impaired renal function

Cefuroxime is excreted by the kidneys. Therefore, as with all such antibiotics, in patients with markedly impaired renal function it is recommended that the dosage of cefuroxime should be reduced to compensate for its slower excretion. However, it is not necessary to reduce the dose until the creatinine clearance falls below 20ml/min. In adults with marked impairment (creatinine clearance 10-20ml/min) 750mg twice a day is recommended and with severe impairment (creatinine clearance <10ml/min) 750mg once daily is adequate. For patients on haemodialysis a further 750mg dose should be given at the end of each dialysis. When continuous peritoneal dialysis is being used, a suitable dosage is usually 750mg twice daily.

For patients in renal failure on continuous arteriovenous haemodialysis or high-flux haemofiltration in intensive therapy units a suitable dosage is 750mg twice daily. For low-flux haemofiltration follow the dosage recommended under impaired renal function.

Cefuroxime is also available as the axetil ester for oral administration. This permits parenteral therapy with cefuroxime to be followed by oral therapy in situations where a change from parenteral to oral is clinically indicated.

5. TOXICOLOGY

No data required.

6. CLINICAL PHARMACOLOGY

No pharmacokinetic studies are required.

7. EFFICACY

No efficacy studies are required for these applications. The efficacy of cefuroxime has been well described.

8. SAFETY

No safety studies are required for these applications. The safety of cefuroxime and the profile of its potential toxicity in humans have been well described.

No new concerns that are not already known from the profile of cefuroxime have been reported.

9. EXPERT REPORTS

A satisfactory expert report is provided by an appropriately qualified individual.

A periodic Safety Update was also submitted. The safety profile of cefuroxime is well established and no new adverse reaction reports were reported in this Update.

10. SUMMARY OF PRODUCTS CHARACTERISTICS

Satisfactory. Consistent with current cross-reference SPCs.

11. PATIENT INFORMATION LEAFLET

Satisfactory.

12. LABELLING

Satisfactory.

13. MARKETING AUTHORISATION FORM

These are satisfactory.

14. DISCUSSION

These applications submitted meet the criteria for grant of licences.

15. CONCLUSIONS

There are no medical objections to the granting of product licences for these preparations.

OVERALL CONCLUSION AND RISK BENEFIT ASSESSMENT

QUALITY

The important quality characteristics of Cefuroxime 750mg and 1.5g Powder for Solution for Injection or Infusion are well defined and controlled. The specifications and batch analytical results indicate consistency from batch to batch. There are no outstanding quality issues that would have a negative impact on the benefit/risk balance.

PRECLINICAL

No new preclinical data were submitted and none are required for application of this type.

EFFICACY

No new data were submitted and none are required for application of this type.

The SPC, PIL and labelling are satisfactory and consistent with that for reference product.

RISK BENEFIT ASSESSMENT

The quality of the product is acceptable and no new preclinical or clinical safety concerns have been identified. Extensive clinical experience with Cefuroxime is considered to have demonstrated the therapeutic value of the compound. The benefit/risk balance is considered to be positive.

**CEFUROXIME 750MG POWDER FOR INJECTION OR
INFUSION****PL 20117/0008****CEFUROXIME 1.5G POWDER FOR INJECTION OR INFUSION****PL 20117/0009****STEPS TAKEN FOR ASSESSMENT**

1	The MHRA received the marketing authorisation applications on 31 st October 2003
2	Following standard checks and communication with the applicant the MHRA considered the applications valid on 16 th December 2003
3	Following assessment of the applications the MHRA requested further information relating to the clinical dossiers on 28 th July 2004, 24 th September 2004 and on the quality dossier 4 th November 2004, 22 nd December 2005, 31 st October 2006, and 16 th November 2006
4	The applicant responded to the MHRA's requests, providing further information on clinical dossier on 15 th September 2004, and 15 th October 2004 on the quality dossier on 1 st July 2005, 9 th June 2006, 10 th November 2006, and 16 th November 2006
5	The applications were determined on 5 th April 2007

SUMMARY OF PRODUCT CHARACTERISTICS**1 NAME OF THE MEDICINAL PRODUCT**

Cefuroxime 750mg Powder for Solution for Injection or Infusion

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each vial contains cefuroxime sodium equivalent to 750mg cefuroxime.

For a full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Powder for Solution for Injection or Infusion. A white to cream powder.

4 CLINICAL PARTICULARS**4.1 Therapeutic indications**

Cefuroxime is a bactericidal cephalosporin antibiotic which is resistant to most beta-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms. It is indicated for the treatment of infections before the infecting organism has been identified or when caused by sensitive bacteria. In addition, it is an effective prophylactic against post-operative infection in a variety of operations. Usually cefuroxime will be effective alone, but when appropriate it may be used in combination with an aminoglycoside antibiotic, or in conjunction with metronidazole, orally or by suppository or injection, (see Pharmaceutical precautions).

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Bone and joint infections for example, osteomyelitis and septic arthritis.

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4.2 Posology and method of administration

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Elderly: See dosage in adults.

Other Recommendations

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In total hip replacement 1.5g of cefuroxime powder may be mixed dry with each pack of methyl methacrylate cement polymer before adding the liquid monomer.

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Duration of both parenteral and oral therapy is determined by the severity of the infection and the clinical status of the patient.

Dosage in impaired renal function

Cefuroxime is excreted by the kidneys. Therefore, as with all such antibiotics, in patients with markedly impaired renal function it is recommended that the dosage of cefuroxime should be reduced to compensate for its slower excretion. However, it is not necessary to reduce the dose until the creatinine clearance falls below 20ml/min. In adults with marked impairment (creatinine clearance 10-20ml/min) 750mg twice a day is recommended and with severe impairment (creatinine clearance <10ml/min) 750mg once daily is adequate. For patients on haemodialysis a further 750mg dose should be given at the end of each dialysis. When continuous peritoneal dialysis is being used, a suitable dosage is usually 750mg twice daily. For patients in renal failure on continuous arteriovenous haemodialysis or high-flux haemofiltration in intensive therapy units a suitable dosage is 750mg twice daily. For low-flux haemofiltration follow the dosage recommended under impaired renal function.

Cefuroxime is also available as the axetil ester for oral administration. This permits parenteral therapy with cefuroxime to be followed by oral therapy in situations where a change from parenteral to oral is clinically indicated.

4.3 Contraindications

Hypersensitivity to cefuroxime or to any of the cephalosporins. Previous immediate and /or severe hypersensitivity reaction to penicillin or to any other type of beta-lactam drug.

4.4 Special warnings and precautions for use

Special care is indicated in patients who have experienced an allergic reaction to penicillin's or beta-lactams.

There may be some variation on the results of biochemical tests of renal function, but these do not appear to be of clinical importance. As a precaution, renal function should be monitored if this is already impaired.

Delayed sterilisation of the CSF in patients with *Haemophilus influenzae* meningitis may result in an adverse outcome such as deafness and /or neurological sequelae. Persistence of positive CSF cultures of *H. influenzae* at 18-36 hours has been noted in some patients treated with cefuroxime sodium injection and, as with other therapeutic regimens used in the treatment of meningitis, hearing loss has been reported in some children.

With a sequential therapy regime the timing of change to oral therapy is determined by severity of the infection, clinical status of the patient and susceptibility of the pathogens involved. The change to oral therapy should only be made once there is a clear clinical improvement. If there has been no clinical improvement after 72 hours of parenteral treatment, then the patient's treatment should be reviewed.

The sodium content of cefuroxime should be taken into account when prescribing to patients requiring sodium restriction. One gram of sodium cefuroxime contains about 2.2 mmol of sodium thus 750mg dose of cefuroxime contains about 1.8 mmol sodium; and a 1.5 g dose contains about 3.3 mmol sodium.

4.5 Interaction with other medicinal products and other forms of interaction

Cephalosporin antibiotics at high dosage should be given with caution to patients receiving concurrent treatment with potent diuretics such as furosemide and amino glycosides, as these combinations are suspected of adversely affecting renal function. Clinical experience with Cefuroxime has shown that this is not likely to be a problem at the recommended dose levels. Cefuroxime does not interfere in enzyme-based tests for glycosuria. Slight interference with copper reduction methods (Benedict's, Fehling's, Clinitest) may be observed. However, this should not lead to false-positive results, as may be experienced with some other cephalosporins.

It is recommended that either the glucose oxidase or hexokinase methods are used to determine blood/plasma glucose levels in patients receiving cefuroxime. This antibiotic does not interfere in the alkaline picrate assay for creatinine.

4.6 Pregnancy and lactation

There is no experimental evidence of embryopathic or teratogenic effects attributable to cefuroxime but, as with all drugs, it should be administered with caution during the early months of pregnancy.

Cefuroxime is excreted in human milk, and consequently caution should be exercised when cefuroxime is administered to a nursing mother.

4.7 Effects on ability to drive and use machines

Cefuroxime is not known to affect the ability to drive or use machines.

4.8 Undesirable effects

Adverse drug reactions are very rare (<1/10,000) and are generally mild and transient in nature.

The frequency categories assigned to the adverse reactions below are estimates, as for most reactions suitable data for calculating incidence are not available. In addition the incidence of adverse reactions associated with cefuroxime sodium may vary according to the indication.

Data from clinical trials were used to determine the frequency of very common to rare undesirable effects. The frequencies assigned to all other undesirable effects (i.e., those occurring at <1/1000) were mainly determined using post-marketing data, and refer to a reporting rate rather than a true frequency.

The following convention has been used for the classification of frequency: very common 1/10, common 1/100 and <1/10, uncommon 1/1000 and <1/100, rare 1/10,000 and <1/1000, very rare <1/10,000.

Infections and infestations

Rare Candida overgrowth from prolonged use.

Blood and lymphatic system disorders

Common Neutropenia, eosinophilia.

Uncommon Leukopenia, decreased haemoglobin concentration, positive Coomb's test.

Rare Thrombocytopenia.

Very rare Haemolytic anaemia.

Cephalosporins as a class tend to be absorbed onto the surface of red cell membranes and react with antibodies directed against the drug to produce a positive Coomb's Test (which can interfere with cross matching of blood) and very rarely haemolytic anaemia.

Immune system disorders

Hypersensitivity reactions including

Uncommon Skin rash, urticaria and pruritus.

Rare Drug fever.

Very rare Interstitial nephritis, anaphylaxis.

See also Skin and subcutaneous tissue disorders and Renal and urinary disorders.

Gastrointestinal disorders

Uncommon Gastrointestinal disturbance.

Very rare Pseudomembranous colitis.

Hepatobiliary disorders

Common Transient rise in liver enzymes.

Uncommon Transient rise in bilirubin.

Transient rises in serum liver enzymes or bilirubin occur, particularly in patients with pre-existing liver disease, but there is no evidence of harm to the liver.

Skin and subcutaneous tissue disorders

Very rare Erythema multiforme, toxic epidermal necrolysis and Stevens Johnson Syndrome.

See also Immune system disorders.

Renal and urinary disorders

Very rare Elevations in serum creatinine, elevations in blood urea nitrogen and decreased creatinine clearance (See Section 4.4 Special Warnings and Precautions for use).

See also Immune system disorders.

General disorders and administration site conditions

Common Injection site reactions which may include pain and thrombophlebitis

Pain at the intramuscular injection site is more likely at higher doses. However it is unlikely to be a cause for discontinuation of treatment.

4.9. Overdose

Overdosage of cephalosporins can cause cerebral irritation leading to convulsions. Serum levels of cefuroxime can be reduced by haemodialysis or peritoneal dialysis

5. PHARMACOLOGICAL PROPERTIES

5.1. Pharmacodynamic properties

Cefuroxime is a bactericidal cephalosporin antibiotic which is resistant to most beta-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms.

It is highly active against *Staphylococcus aureus*, including strains which are resistant to penicillin (but not the rare methicillin-resistant strains), *Staph. epidermidis*, *Haemophilus influenzae*, *Klebsiella* spp., *Enterobacter* spp., *Streptococcus pyogenes*, *Escherichia coli*, *Str. mitis* (viridans group), *Clostridium* spp., *Proteus mirabilis*, *Pr. rettgeri*, *Salmonella typhi*, *S.*

typhimurium and other Salmonella spp., Shigella spp., Neisseria spp. (including beta-lactamase producing strains of *N. gonorrhoea*) and *Bordetella pertussis*. It is also moderately active against strains of *Pr. vulgaris*, *Morganella morganii* (formerly *Proteus morganii*) and *Bacteroides fragilis*.

The following organisms are not susceptible to cefuroxime: *Clostridium difficile*, *Pseudomonas* spp., *Campylobacter* spp., *Acinetobacter calcoaceticus*, *Legionella* spp. and methicillin-resistant strains of *Staph. aureus* and *Staph. epidermidis*.

Some strains of the following genera have also been found not to be susceptible to cefuroxime:

Strep. faecalis, *Morganella morganii*, *Proteus vulgaris*, *Enterobacter* spp., *Citrobacter* spp., *Serratia* spp. and *Bacteroides fragilis*.

In vitro the activities of cefuroxime and aminoglycoside antibiotics in combination have been shown to be at least additive with occasional evidence of synergy.

5.2. Pharmacokinetic properties

Peak levels of cefuroxime are achieved within 30 to 45 minutes after intramuscular administration. The serum half-life after either intramuscular or intravenous injection is approximately 70 minutes. Concurrent administration of probenecid prolongs the excretion of the antibiotic and produces an elevated peak serum level. There is almost complete recovery of unchanged cefuroxime in the urine within 24 hours of administration, the major part being eliminated in the first six hours. Approximately 50% is excreted through the renal tubules and approximately 50% by glomerular filtration. Concentrations of cefuroxime in excess of the minimum inhibitory levels for common pathogens can be achieved in bone, synovial fluid and aqueous humour. Cefuroxime passes the blood-brain barrier when the meninges are inflamed.

5.3. Preclinical safety data

No additional data of relevance.

6. PHARMACEUTICAL PARTICULARS

6.1. List of excipients

None.

6.2. Incompatibilities

The pH of 2.74% w/v sodium bicarbonate injection BP considerably affects the colour of solutions and therefore this solution is not recommended for the dilution of cefuroxime. However, if required, for patients receiving sodium bicarbonate injection by infusion the cefuroxime may be introduced into the tube of the giving set.

Cefuroxime should not be mixed in the syringe with aminoglycoside antibiotics.

6.3. Shelf life

Unopened: 2 years

After reconstitution: Use immediately.

6.4. Special precautions for storage

Store below 25°C. Keep container in the outer carton.

From a microbiological point of view, once opened, the product should be used immediately.

6.5. Nature and contents of container

10mL Type I clear flint glass vial, stoppered with grey type I chlorobutyl rubber stopper and sealed with aluminium seals.

6.6 Instructions for use, handling and disposal

Reconstitution: appropriate amounts of Water for Injections should be added to prepare an off-white suspension for intramuscular use or a yellowish solution for intravenous administration. The appearance of the Reconstituted product is an off-white suspension.

Intramuscular: Add 3 ml Water for Injections to 750mg, shake gently.

Intravenous: Dissolve cefuroxime in Water for Injections using at least 6 ml for 750mg. For short intravenous infusion (e.g. up to 30 minutes), 750mg may be dissolved in 25ml Water for Injections. These solutions may be given directly into the vein or introduced into the tubing of the giving set if the patient is receiving parenteral fluids.

Cefuroxime is compatible with most commonly used intravenous fluids and electrolyte solutions. Water for Injections is recommended for reconstitution, followed by dilution (prior to intravenous administration) with Water for Injections, 5% dextrose injection or 0.9% sodium chloride injection.

Cefuroxime sodium is also compatible with lactated Ringer's, 10% dextrose, 10% invert sugar or 0.1M sodium lactate.

Administrative Data**7. MARKETING AUTHORISATION HOLDER**

Morningside Healthcare Ltd
115 Narborough Road
Leicester LE3 0PA
United Kingdom

8. MARKETING AUTHORISATION NUMBER

PL 20117/0008

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

05/04/2007

10. DATE OF REVISION OF THE TEXT

05/04/2007

1. NAME OF THE MEDICINAL PRODUCT

Cefuroxime 1.5g Powder for Solution for Injection or Infusion

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each vial contains cefuroxime sodium equivalent to 1.5g cefuroxime.
For a full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Powder for Solution for Injection or Infusion.
A white to cream powder.

4. CLINICAL PARTICULARS**4.1. Therapeutic indications**

Cefuroxime is a bactericidal cephalosporin antibiotic which is resistant to most beta-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms. It is indicated for the treatment of infections before the infecting organism has been identified or when caused by sensitive bacteria. In addition, it is an effective prophylactic against post-operative infection in a variety of operations. Usually cefuroxime will be effective alone, but when appropriate it may be used in combination with an aminoglycoside antibiotic, or in conjunction with metronidazole, orally or by suppository or injection, (see Pharmaceutical precautions).

In situations where mixed aerobic and anaerobic infections are encountered or suspected (e.g. peritonitis, aspiration pneumonia, abscesses in the lung, pelvis and brain), or are likely to occur (e.g. in association with colorectal or gynaecological surgery) it is appropriate to administer cefuroxime in combination with metronidazole.

Most of these infections will respond to an i.v. regimen of cefuroxime injection (750mg) plus metronidazole (500mg/100ml) administered eight-hourly. In more severe or well established mixed infections, an i.v. regimen of cefuroxime (1.5g) plus metronidazole injection (500mg/100ml) eight-hourly may be indicated. For the prophylaxis of infection in surgery (e.g. colorectal and gynaecological) a single dose of 1.5g cefuroxime plus metronidazole injection (500mg/100ml) is appropriate.

Alternatively this may be followed by two 750mg doses of cefuroxime plus metronidazole.

Indications include:

Respiratory tract infections for example, acute and chronic bronchitis, infected bronchiectasis, bacterial pneumonia, lung abscess and post operative chest infections.

Ear, nose and throat infections for example, sinusitis, tonsillitis and pharyngitis.

Urinary tract infections for example acute and chronic pyelonephritis, cystitis and asymptomatic bacteriuria.

Soft-tissue infections for example cellulitis, erysipelas, peritonitis and wound infections.

Bone and joint infections for example, osteomyelitis and septic arthritis.

Obstetric and gynaecological infections pelvic inflammatory diseases.

Gonorrhoea particularly when penicillin is unsuitable.

Other infections including septicaemia and meningitis.

Prophylaxis against infection in abdominal, pelvic, orthopaedic, cardiac, pulmonary, oesophageal and vascular surgery where there is increased risk from infection.

Where appropriate cefuroxime is effective when used prior to oral therapy in the treatment of pneumonia and acute exacerbations of chronic bronchitis.

4.2. Posology and method of administration

Intramuscular

Add 6ml water for injections to 1.5g cefuroxime. Shake gently to produce an opaque suspension.

Intravenous

Dissolve cefuroxime in water for injections using 15ml for 1.5g. For short intravenous infusion (e.g. up to 30 minutes), 1.5g may be dissolved in 50ml water for injections. These solutions may be given directly into the vein or introduced into the tubing of the giving set if the patient is receiving parenteral fluids.

General Recommendations

Adults: Many infections will respond to 750mg three times a day by IM or IV injection. For more severe infections, this dose should be increased to 1.5g three times a day IV. The frequency of IM or IV injection can be increased to six-hourly if necessary, giving total doses of 3g to 6g daily.

Where clinically indicated adults with pneumonia and acute exacerbations of chronic bronchitis have been shown to respond to 750mg or 1.5g twice a day, followed by oral therapy with cefuroxime axetil (see Sequential therapy).

Infants and Children: Doses of 30 to 100mg/kg/day given as three or four divided doses. A dose of 60mg/kg/day will be appropriate for most infections.

Neonates: Doses of 30 to 100mg/kg/day given as two or three divided doses. In the first weeks of life the serum half-life of cefuroxime can be three to five times that in adults.

Elderly: See dosage in adults.

Other Recommendations

Gonorrhoea:

1.5g should be given as a single dose. This may be given as 2 x 750mg injections into different sites e.g. each buttock.

Meningitis:

Cefuroxime is suitable for sole therapy of bacterial meningitis due to sensitive strains. The following dosages are recommended.

Infants and Children: 200 to 240mg/kg/day IV in three or four divided doses. This dosage may be reduced to 100mg/kg/day IV after three days or when clinical improvement occurs.

Neonates: The initial dosage should be 100mg/kg/day IV. A reduction to 50mg/kg/day IV may be made when clinically indicated.

Adults: 3g IV every eight hours. Data are not yet sufficient to recommend a dose for intrathecal administration.

Prophylaxis:

The usual dose is 1.5g IV with induction of anaesthesia for abdominal, pelvic and orthopaedic operations but may be supplemented with two 750mg IM doses eight and sixteen hours later.

In cardiac, pulmonary, oesophageal and vascular operations the usual dose is 1.5g iv with induction of anaesthesia continuing with 750mg IM three times a day for a further 24-48 hours

In total hip replacement 1.5g of cefuroxime powder may be mixed dry with each pack of methyl methacrylate cement polymer before adding the liquid monomer.

Sequential therapy:

Pneumonia:

1.5g twice a day (IV or IM) for 48-72 hours followed by 500mg twice a day cefuroxime axetil oral therapy for 7 days

Acute exacerbations of chronic bronchitis:

750mg twice a day (IV or IM) for 48-72 hours followed by 500mg twice a day cefuroxime axetil oral therapy for 5-7 days.

Duration of both parenteral and oral therapy is determined by the severity of the infection and the clinical status of the patient.

Dosage in impaired renal function

Cefuroxime is excreted by the kidneys. Therefore, as with all such antibiotics, in patients with markedly impaired renal function it is recommended that the dosage of cefuroxime should be reduced to compensate for its slower excretion. However, it is not necessary to reduce the dose until the creatinine clearance falls below 20ml/min. In adults with marked impairment (creatinine clearance 10-20ml/min) 750mg twice a day is recommended and with severe impairment (creatinine clearance <10ml/min) 750mg once daily is adequate. For patients on haemodialysis a further 750mg dose should be given at the end of each dialysis. When continuous peritoneal dialysis is being used, a suitable dosage is usually 750mg twice daily.

For patients in renal failure on continuous arteriovenous haemodialysis or high-flux haemofiltration in intensive therapy units a suitable dosage is 750mg twice daily. For low-flux haemofiltration follow the dosage recommended under impaired renal function.

Cefuroxime is also available as the axetil ester for oral administration. This permits parenteral therapy with cefuroxime to be followed by oral therapy in situations where a change from parenteral to oral is clinically indicated.

4.3. Contraindications

Hypersensitivity to cefuroxime or to any of the cephalosporins. Previous immediate and /or severe hypersensitivity reaction to penicillin or to any other type of beta-lactam drug.

4.4. Special warnings and precautions for use

Special care is indicated in patients who have experienced an allergic reaction to penicillin's or beta-lactams.

There may be some variation on the results of biochemical tests of renal function, but these do not appear to be of clinical importance. As a precaution, renal function should be monitored if this is already impaired.

Delayed sterilisation of the CSF in patients with *Haemophilus influenzae* meningitis may result in an adverse outcome such as deafness and /or neurological sequelae. Persistence of positive CSF cultures of *H. influenzae* at 18-36 hours has been noted in some patients treated with cefuroxime sodium injection and, as with other therapeutic regimens used in the treatment of meningitis, hearing loss has been reported in some children.

With a sequential therapy regime the timing of change to oral therapy is determined by severity of the infection, clinical status of the patient and susceptibility of the pathogens

involved. The change to oral therapy should only be made once there is a clear clinical improvement. If there has been no clinical improvement after 72 hours of parenteral treatment, then the patient's treatment should be reviewed.

The sodium content of cefuroxime should be taken into account when prescribing to patients requiring sodium restriction. One gram of sodium cefuroxime contains about 2.2 mmol of sodium thus 750mg dose of cefuroxime contains about 1.8 mmol sodium; and a 1.5 g dose contains about 3.3 mmol sodium

4.5. Interactions with other medicinal products and other forms of interaction

Cephalosporin antibiotics at high dosage should be given with caution to patients receiving concurrent treatment with potent diuretics such as furosemide and amino glycosides, as these combinations are suspected of adversely affecting renal function. Clinical experience with Cefuroxime has shown that this is not likely to be a problem at the recommended dose levels.

Cefuroxime does not interfere in enzyme-based tests for glycosuria. Slight interference with copper reduction methods (Benedict's, Fehling's, Clinitest) may be observed. However, this should not lead to false-positive results, as may be experienced with some other cephalosporins.

It is recommended that either the glucose oxidase or hexokinase methods are used to determine blood/plasma glucose levels in patients receiving cefuroxime. This antibiotic does not interfere in the alkaline picrate assay for creatinine.

4.6. Pregnancy and lactation

There is no experimental evidence of embryopathic or teratogenic effects attributable to cefuroxime but, as with all drugs, it should be administered with caution during the early months of pregnancy.

Cefuroxime is excreted in human milk, and consequently caution should be exercised when cefuroxime is administered to a nursing mother.

4.7. Effects on ability to drive and use machines

Cefuroxime is not known to affect the ability to drive or use machines.

4.8. Undesirable effects

Adverse drug reactions are very rare (<1/10,000) and are generally mild and transient in nature.

The frequency categories assigned to the adverse reactions below are estimates, as for most reactions suitable data for calculating incidence are not available. In addition the incidence of adverse reactions associated with cefuroxime sodium may vary according to the indication.

Data from clinical trials were used to determine the frequency of very common to rare undesirable effects. The frequencies assigned to all other undesirable effects (i.e., those occurring at <1/1000) were mainly determined using post-marketing data, and refer to a reporting rate rather than a true frequency.

The following convention has been used for the classification of frequency:

very common $\geq 1/10$, common $\geq 1/100$ and <1/10, uncommon $\geq 1/1000$ and <1/100, rare $\geq 1/10,000$ and <1/1000, very rare <1/10,000.

Infections and infestations	
Rare	Candida overgrowth from prolonged use.
Blood and lymphatic system disorders	

Common	Neutropenia, eosinophilia.
Uncommon	Leukopenia, decreased haemoglobin concentration, positive Coomb's test.
Rare	Thrombocytopenia.
Very rare	Haemolytic anaemia.

Cephalosporins as a class tend to be absorbed onto the surface of red cell membranes and react with antibodies directed against the drug to produce a positive Coomb's Test (which can interfere with cross matching of blood) and very rarely haemolytic anaemia.

Immune system disorders Hypersensitivity reactions including	
Uncommon	Skin rash, urticaria and pruritus.
Rare	Drug fever.
Very rare	Interstitial nephritis, anaphylaxis.

See also Skin and subcutaneous tissue disorders and Renal and urinary disorders.

Gastrointestinal disorders	
Uncommon	Gastrointestinal disturbance.
Very rare	Pseudomembranous colitis.

Hepatobiliary disorders	
Common	Transient rise in liver enzymes.
Uncommon	Transient rise in bilirubin.

Transient rises in serum liver enzymes or bilirubin occur, particularly in patients with pre-existing liver disease, but there is no evidence of harm to the liver.

Skin and subcutaneous tissue disorders	
Very rare	Erythema multiforme, toxic epidermal necrolysis and Stevens Johnson Syndrome.

See also Immune system disorders.

Renal and urinary disorders	
Very rare	Elevations in serum creatinine, elevations in blood urea nitrogen and decreased creatinine clearance (See Section 4.4 Special Warnings and Precautions for use).

See also Immune system disorders.

General disorders and administration site conditions	
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Common	Injection site reactions which may include pain and thrombophlebitis
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Pain at the intramuscular injection site is more likely at higher doses. However it is unlikely to be a cause for discontinuation of treatment.

4.9. Overdose

Overdosage of cephalosporins can cause cerebral irritation leading to convulsions. Serum levels of cefuroxime can be reduced by haemodialysis or peritoneal dialysis

5. PHARMACOLOGICAL PROPERTIES

5.1. Pharmacodynamic properties

Cefuroxime is a bactericidal cephalosporin antibiotic which is resistant to most beta-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms.

It is highly active against *Staphylococcus aureus*, including strains which are resistant to penicillin (but not the rare methicillin-resistant strains), *Staph. epidermidis*, *Haemophilus influenzae*, *Klebsiella* spp., *Enterobacter* spp., *Streptococcus pyogenes*, *Escherichia coli*, *Str. mitis* (*viridans* group), *Clostridium* spp., *Proteus mirabilis*, *Pr. rettgeri*, *Salmonella typhi*, *S. typhimurium* and other *Salmonella* spp., *Shigella* spp., *Neisseria* spp. (including beta-lactamase producing strains of *N. gonorrhoea*) and *Bordetella pertussis*. It is also moderately active against strains of *Pr. vulgaris*, *Morganella morganii* (formerly *Proteus morganii*) and *Bacteroides fragilis*.

The following organisms are not susceptible to cefuroxime: *Clostridium difficile*, *Pseudomonas* spp., *Campylobacter* spp., *Acinetobacter calcoaceticus*, *Legionella* spp. and methicillin-resistant strains of *Staph. aureus* and *Staph. epidermidis*.

Some strains of the following genera have also been found not to be susceptible to cefuroxime:

Strep. faecalis, *Morganella morganii*, *Proteus vulgaris*, *Enterobacter* spp., *Citrobacter* spp., *Serratia* spp. and *Bacteroides fragilis*.

In vitro the activities of cefuroxime and aminoglycoside antibiotics in combination have been shown to be at least additive with occasional evidence of synergy.

5.2. Pharmacokinetic properties

Peak levels of cefuroxime are achieved within 30 to 45 minutes after intramuscular administration. The serum half-life after either intramuscular or intravenous injection is approximately 70 minutes. Concurrent administration of probenecid prolongs the excretion of the antibiotic and produces an elevated peak serum level. There is almost complete recovery of unchanged cefuroxime in the urine within 24 hours of administration, the major part being eliminated in the first six hours. Approximately 50% is excreted through the renal tubules and approximately 50% by glomerular filtration. Concentrations of cefuroxime in excess of the minimum inhibitory levels for common pathogens can be achieved in bone, synovial fluid and aqueous humour. Cefuroxime passes the blood-brain barrier when the meninges are inflamed.

5.3. Preclinical safety data

No additional data of relevance.

6. PHARMACEUTICAL PARTICULARS

6.1. List of excipients

None.

6.2. Incompatibilities

The pH of 2.74% w/v sodium bicarbonate injection BP considerably affects the colour of solutions and therefore this solution is not recommended for the dilution of cefuroxime. However, if required, for patients receiving sodium bicarbonate injection by infusion the cefuroxime may be introduced into the tube of the giving set.

Cefuroxime should not be mixed in the syringe with aminoglycoside antibiotics.

6.3. Shelf life

Unopened: 2 years

After reconstitution: Use immediately.

6.4. Special precautions for storage

Store below 25°C. Keep container in the outer carton.

From a microbiological point of view, once opened, the product should be used immediately.

6.5. Nature and contents of container

10mL Type I clear flint glass vial, stoppered with grey type I chlorobutyl rubber stopper and sealed with aluminium seals.

6.6 Instructions for use, handling and disposal

Reconstitution: appropriate amounts of Water for Injections should be added to prepare an off-white suspension for intramuscular use or a yellowish solution for intravenous administration. The appearance of the Reconstituted product is an off-white suspension.

Intramuscular: Add 3 ml Water for Injections to 750mg, shake gently.

Intravenous: Dissolve cefuroxime in Water for Injections using at least 6 ml for 750mg. For short intravenous infusion (e.g. up to 30 minutes), 750mg may be dissolved in 25ml Water for Injections. These solutions may be given directly into the vein or introduced into the tubing of the giving set if the patient is receiving parenteral fluids.

Cefuroxime is compatible with most commonly used intravenous fluids and electrolyte solutions. Water for Injections is recommended for reconstitution, followed by dilution (prior to intravenous administration) with Water for Injections, 5% dextrose injection or 0.9% sodium chloride injection.

Cefuroxime sodium is also compatible with lactated Ringer's, 10% dextrose, 10% invert sugar or 0.1M sodium lactate.

Administrative Data**7. MARKETING AUTHORISATION HOLDER**

Morningside Healthcare Ltd
115 Narborough Road
Leicester LE3 0PA
United Kingdom

8. MARKETING AUTHORISATION NUMBER

PL 20117/0009

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

05/04/2007

10. DATE OF REVISION OF THE TEXT

05/04/2007

PATIENT INFORMATION LEAFLET

PATIENT INFORMATION LEAFLET

For Cefuroxime 750 mg or 1.5g Powder for Solution for Injection or Infusion

PLEASE READ ALL of this leaflet carefully before you start taking this medicine

- Keep this leaflet. You may need to read it again.
- If you have further questions, please ask your doctor or your pharmacist.
- This medicine has been prescribed for you and should not be passed on to other people. It may harm them, even if their symptoms are the same as yours.

Please read this entire leaflet when you start your course of treatment with ‘Cefuroxime’. This is a summary of the information about this medicine. If you are not sure about anything or want to know more, ask your doctor or pharmacist. Please keep this leaflet in a safe place; you may want to read it again.

Who makes Cefuroxime Powder for Solution for Injection or Infusion?

Marketing Authorisation Holder: Morningside Healthcare Ltd, 115 Narborough Road, Leicester, LE3 0PA.
Manufacturer: Medochemie Ltd, Iapetou St., V.I.P.E, Agios, Athanasios, Limassol, Cyprus

What ‘Cefuroxime’ is and what is it used for?

Cefuroxime is a powder which is made into solution to be given by injection into a vein. Cefuroxime is an antibiotic, given for the treatment of infections including infections of the chest, ear, nose and throat; cystitis and kidney infections; skin, soft tissue, bone and joint infections; pelvic inflammatory diseases; septicaemia and meningitis and gonorrhoea. A doctor may also give it to you before an operation to protect you from infection.

Cefuroxime is supplied in vials of 750mg or 1.5g containing a white or off white lyophilised powder in a 10ml or 15ml glass bottle respectively. The only ingredient is Cefuroxime 750 mg or 1.5 g (as sodium salt)

Before you use Cefuroxime

Do not use Cefuroxime if:

- You have had an allergic reaction to antibiotics such as penicillin or cephalosporins. (An allergic reaction may include a rash, itching or breathing difficulties).
- You are allergic (hypersensitive) to cefuroxime.
- You are pregnant, trying for a baby or breast feeding.
- You have kidney disease or are on dialysis.
-

Take special care with Cefuroxime

- If your urine is tested for sugar, cefuroxime may but does not normally cause a false positive result as occurs with some other cephalosporin antibiotics.
- If you have any blood tests, cefuroxime can cause changes to the results.
- Like other medicines used to treat meningitis, cefuroxime may take a while to clear the body of all the meningitis infection because of this, hearing loss caused by meningitis has occurred in a few patients after using cefuroxime to treat the disease.

Please tell your doctor or pharmacist if you are taking or have recently taken any other medicines, including medicines obtained without a prescription.

In particular, **are you taking any of the following?**

- diuretics (water tablets) e.g. furosemide,
- probenecid
- other antibiotics

What if I am pregnant (or think I might be pregnant) or breast-feeding?

There is no evidence of harmful effects caused by cefuroxime in pregnancy. But, cefuroxime should only be given during pregnancy after careful consideration of the risks and benefits. **If you are pregnant** or you think you may be pregnant or you are trying for a baby, tell your doctor or pharmacist before taking this medicine. Cefuroxime is excreted in human milk, and should be given to nursing mothers with caution. Please **tell your doctor if you are breastfeeding**.

Can I drive or operate machinery?

There are no known effects on your ability to drive or operate machinery whilst receiving cefuroxime Injection.

How to use Cefuroxime

Your doctor will decide on the dose and the duration of treatment. This medicine will normally be given by an infusion of a solution into a vein or a muscle. Usual doses are as follows:

Adults: Most adults need 750mg three or four times a day but for more severe infections this may be increased to 1.5g three or four times a day. If you have kidney trouble, you may be given the lower dose just once or twice a day.

- Your doctor may give you 1.5g of cefuroxime before surgery to protect you from infection. You may get further doses of 750mg of cefuroxime after the operation.
- If you have a joint replacement operation, cefuroxime powder may be mixed in the cement which is used.
- To treat pneumonia in adults, the usual dose of cefuroxime is 1.5 g, twice a day for 2 to 3 days, followed by a 7 day course of the oral form of cefuroxime axetil
- To treat a sudden worsening of chronic bronchitis, the usual dose of cefuroxime is 750 mg, twice a day for 2 to 3 days, followed by a 5 to 7 day course of cefuroxime axetil

Infants and children: Most need 60mg for each kilogram of their body weight each day. This will be divided into doses of three or four times a day.

Newborn babies: Most need 30 to 100mg for each kilogram of their body weight each day. This will be divided into doses of two or three a day.

- If you or a child are being treated for meningitis, larger doses of cefuroxime may be needed.

If you miss a dose or receive too much

As this medicine will be given to you whilst you are in hospital, it is unlikely that you will miss a dose or be given too much however, if you have any concerns discuss this with your doctor or nurse.

Possible side effects

Like all medicines cefuroxime can cause side effects, although not everybody gets them.

Common (more than one in a hundred but less than one in ten patients):

- Pain or swelling where the needle went into your vein or muscle
- Abnormal increase or decrease in some types of cells with your blood
- Changes to test used to measure functioning of the liver

Uncommon (more than one in a hundred but less than one in 1,000 patients):

- Itching, rash or hives of the skin
- Diarrhoea or vomiting

Rare (more than one in 10,000 but less than one in 1,000 patients):

- Fever
- Unusual bleeding or bruising
- White furry, sore tongue and mouth (oral thrush)
- Sore, itchy vagina and/or discharge (vaginal thrush)

Very rare (less than one in 10,000 cases):

- Persistent diarrhoea, sometimes bloody (colitis)
- Swelling of the face, lips, mouth or eyelids
- Kidney inflammation
- Swelling of the face, lips, mouth or eyelids
- Peeling or blistering of the skin

If any of the side effects gets serious, or if you notice any side effects not listed in this leaflet, please tell your doctor or pharmacist.

Storing Cefuroxime

Keep out of the reach and sight of children. The vials should be stored below 25°C and in the outer carton to protect from light.

Use by date

Do not use this medicine after the expiry date stated on the carton.

This leaflet was revised in November 2006

LABELLING

<p>POM PL20117/0008</p> <p>LOT:</p> <p>EXP:</p> <p>Each vial contains 750mg cefuroxime as sodium salt.</p> <p>Powder for solution for injection or infusion.</p> <p>For intravenous and intramuscular use.</p>	<p>750mg Injection</p> <p>Cefuroxime</p> <p>750mg Powder</p> <p>for Solution for Injection or Infusion</p>	<p>Keep out of reach and sight of children.</p> <p>For single use only</p> <p>Do not store above 25°C.</p> <p>See enclosed leaflet.</p> <p>Reconstitute before use.</p> <p>Prepared solutions should be used immediately.</p> <p>Use as directed by a medical practitioner.</p> <p>Discard any unused solution.</p> <p>Keep the container in the outer carton</p> <p>MORNINGSIDE HEALTHCARE</p>
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<p>MORNINGSIDE HEALTHCARE</p> <p>Cefuroxime 750mg Powder for Solution for Injection or Infusion</p> <p>750mg Injection</p> <p>1 vial</p> <p>Exp. date:</p> <p>Lot No.:</p>			
<p>750mg Injection</p> <p>Each vial contains 750mg cefuroxime as sodium salt.</p> <p>Powder for solution for injection or infusion.</p> <p>For intravenous and intramuscular use.</p> <p>Cefuroxime</p> <p>750mg Powder</p> <p>for Solution for Injection or Infusion</p> <p>MORNINGSIDE HEALTHCARE</p> <p>1 vial</p>	<p>POM PL20117/0008</p> <p>Morningside Healthcare Ltd. 115 Narborough Road Leicester LE3 0PA United Kingdom</p> <p>5106002546290561</p> 	<p>750mg Injection</p> <p>Each vial contains 750mg cefuroxime as sodium salt.</p> <p>Powder for solution for injection or infusion.</p> <p>For intravenous and intramuscular use.</p> <p>Cefuroxime</p> <p>750mg Powder</p> <p>for Solution for Injection or Infusion</p> <p>MORNINGSIDE HEALTHCARE</p> <p>1 vial</p>	<p>Cefuroxime 750mg Powder for Solution for injection or infusion</p> <p>Keep out of reach and sight of children.</p> <p>For single use only.</p> <p>Do not store above 25°C.</p> <p>Keep the vial in the outer carton.</p> <p>Directions: See enclosed leaflet. Reconstitute before use. Prepared solutions should be used immediately. (see leaflet) Use as directed by a medical practitioner.</p> <p>Discard any unused solution.</p>
		<p>750mg Injection 1 vial</p> <p>Cefuroxime</p> <p>750mg Powder</p> <p>for Solution for Injection or Infusion</p> <p>MORNINGSIDE HEALTHCARE</p>	



<p>POM PL20117/0009</p> <p>LOT:</p> <p>EXP:</p> <p>Each vial contains 1.5g cefuroxime as sodium salt.</p> <p>Powder for solution for injection or infusion.</p> <p>For intravenous and intramuscular use.</p>	<p>1.5g Injection</p> <p>Cefuroxime</p> <p>1.5g Powder</p> <p>for Solution for Injection or Infusion</p>	<p>Keep out of reach and sight of children.</p> <p>For single use only</p> <p>Do not store above 25°C.</p> <p>See enclosed leaflet.</p> <p>Reconstitute before use.</p> <p>Prepared solutions should be used immediately.</p> <p>Use as directed by a medical practitioner.</p> <p>Discard any unused solution.</p> <p>Keep the container in the outer carton</p> <p>MORNINGSIDE HEALTHCARE</p>
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 <p>Exp. date:</p> <p>Lot No.:</p>			
<p>1.5g Injection</p> <p>Each vial contains 1.5g cefuroxime as sodium salt.</p> <p>Powder for solution for injection or infusion.</p> <p>For intravenous and intramuscular use.</p> <p>Cefuroxime</p> <p>1.5g Powder</p> <p>for Solution for Injection or Infusion</p> <p>MORNINGSIDE HEALTHCARE</p> <p>1 vial</p>	<p>POM PL20117/0009</p> <p>Morningside Healthcare Ltd. 115 Narborough Road Leicester LE3 0PA United Kingdom</p> 	<p>1.5g Injection</p> <p>Each vial contains 1.5g cefuroxime as sodium salt.</p> <p>Powder for solution for injection or infusion.</p> <p>For intravenous and intramuscular use.</p> <p>Cefuroxime</p> <p>1.5g Powder</p> <p>for Solution for Injection or Infusion</p> <p>MORNINGSIDE HEALTHCARE</p> <p>1 vial</p>	<p>Cefuroxime 1.5 Powder for Solution for Injection or Infusion</p> <p>Keep out of reach and sight of children.</p> <p>For single use only.</p> <p>Do not store above 25°C.</p> <p>Keep the vial in the outer carton.</p> <p>Directions:</p> <p>See enclosed leaflet.</p> <p>Reconstitute before use.</p> <p>Prepared solutions should be used immediately. (see leaflet)</p> <p>Use as directed by a medical practitioner.</p> <p>Discard any unused solution.</p>
		<p>1.5g Injection 1 vial</p> <p>Cefuroxime</p> <p>1.5g Powder</p> <p>for Solution for Injection or Infusion</p> <p>MORNINGSIDE HEALTHCARE</p>	

