# Cefazolin Sandoz® 1 g Vial

## 1. NAME OF THE MEDICINAL PRODUCT
Cefazolin Sandoz 1 g Vial

## 2. QUALITITATIVE AND QUANTITATIVE COMPOSITION
Each vial contains Cefazolin 1,000 mg (as sodium salt).

## 3. PHARMACEUTICAL FORM
Powder for solution for injection/infusion. White to light yellow powder.

## 4. CLINICAL PARTICULARS
### 4.1 Therapeutic Indications
Cefazolin is indicated in a number of infections caused by cefazolin-sensitive microorganisms. These include:
- *Infections of the respiratory tract like bronchitis and pneumonia*
- *Infections of the urogenital tract like pyelonephritis, cystitis, urethritis and prostatitis*
- *Infections of the skin and soft tissues*
- *Infections of the bile ducts*
- *Bone and joint infections*
- *Endocarditis*
- *Systemic septic infections*
- *Perioperative prophylaxis (hysterectomy, cholecystectomy, open-heart surgery, bone and joint surgery).*

Use of cefazolin should be restricted to cases needing to be treated parenterally.

Consideration should be given to official guidance (e.g. national recommendations) on the appropriate use of antibacterial agents.

Susceptibility of the causative organism to the treatment should be tested (if possible), although therapy may be initiated before the results are available.

### 4.2 Posology and method of administration
Posology

The dose depends on the susceptibility of the pathogens and the severity of the disease.

***Adults***

| Type of infection | Dose | Frequency | Total daily dose |
|---|---|---|---|
| Mild infections (caused by Gram-positive organisms) | 500 mg<br>1 g | every 8 hours<br>every 12 hours | 1.5 g<br>2 g |
| Uncomplicated urinary tract infections | 1 g | every 12 hours | 2 g |
| Moderate to severe infections (caused by Gram-negative organisms) | 1 g | every 6 to 8 hours | 3 g - 4 g |
| Life-threatening infections | 1 g - 1.5 g | every 6 hours | 4 g - 6 g |

Rarely, doses up on to 12 g daily were administered.

***In adult patients with renal insufficiency***

The dose schedule below should be followed:

| Creatinine clearance (ml/min x 1.73 $m^2$) | Serum creatinine | Total daily dose | Dose interval |
|---|---|---|---|
| ≥55 | ≤1.5 | usual dose | unchanged |
| 35 - 54 | 1.6 - | usual dose | 12 hour intervals |
| 11 - 34 | 3.1 - | half the usual dose | 12 hour intervals |

| | | | |
|---|---|---|---|
| ≤10 | ≥4.6 | quarter the usual dose | 24 hour intervals |

In patients undergoing haemodialysis, the schedule regimen depends on the conditions of dialysis.

***For perioperative use***
To prevent infections doses depend on the type and duration of surgery.
The doses below are recommended:
30 minutes to 1 hour prior to surgery, an initial dose of 1 g to 2 g is administered i.v. or i.m.

For longer operations (2 hours or more) another dose of 500 mg to 1 g is administered i.v. or i.m. intraoperatively. The dose level and the timing depend on the type and duration of surgery.

Postoperatively 500 mg to 1 g are administered i.v. or i.m. at intervals of 6 to 8 hours for 24 hours.

If potential infections are likely to be very dangerous for the patient (e.g. after cardiac surgery or major orthopaedic surgery such as total joint replacement), it is advisable to continue postoperative dosing for 24 up to 48 hours.

***Elderly patients***
No dose adjustment are needed in elderly patients with normal renal function.

***Children and adolescents***
A total daily dose of 25 - 50 mg/kg body weight divided in 3 - 4 fractions is effective in most mild to moderate infections.

In severe infections, the total dose may be increased to the maximum recommended dose of 100 mg/kg body weight.

Dose guidelines for infants, toddlers and children (indicative values):

| Bodyweight | 25mg/kg daily in 3 doses | | 25 mg/kg daily in 4 doses | |
|---|---|---|---|---|
| | Dose at intervals of approx. 8 hours | Volume to be withdrawn at a concentration of 125 mg/ml | Dose at intervals of approx. 6 hours | Volume to be withdrawn at a concentration of 125 mg/ml |
| 4.5 kg | 40 mg | 0.35 ml | 30 mg | 0.25 ml |
| 9.0 kg | 75 mg | 0.6 ml | 55 mg | 0.45 ml |
| 13.5 kg | 115 mg | 0.9 ml | 85 mg | 0.7 ml |
| 18.0 kg | 150 mg | 1.2 ml | 115 mg | 0.9 ml |
| 22.5 kg | 190 mg | 1.5 ml | 140 mg | 1.1 ml |

| Bodyweight | 50mg/kg daily in 3 doses | | 50 mg/kg daily in 4 doses | |
|---|---|---|---|---|
| | Dose at intervals of approx. 8 hours | Volume to be withdrawn at a concentration of 225 mg/ml | Dose at intervals of approx. 6 hours | Volume to be withdrawn at a concentration of 225 mg/ml |
| 4.5 kg | 75 mg | 0.35 ml | 55 mg | 0.25 ml |
| 9.0 kg | 150 mg | 0.7 ml | 110 mg | 0.5 ml |
| 13.5 kg | 225 mg | 1.0 ml | 170 mg | 0.75 ml |
| 18.0 kg | 300 mg | 1.35 ml | 225 mg | 1.0 ml |
| 22.5 kg | 375 mg | 1.7 ml | 285 mg | 1.25 ml |

***Term newborn infants***

Safety of use in term newborn infants has not been established (see section 4.4).

***Children with renal insufficiency***

| Creatinine Clearance (ml/min/1.73 $m^2$) | Dose of cefazolin (mg/kg) | Interval between doses (hr) |
|---|---|---|
| >50 | 7 (up to 500 mg/dose) | 6 - 8 |
| 25 - 50 | 7 | 12 |
| 10 - 25 | 7 | 24 - 36 |
| <10 | 7 | 48 - 72 |

Children undergoing hemodialysis are given 7 mg/kg body weight at the beginning of treatment. As cefazolin serum levels drop by 35% to 65% during dialysis, a dose of 3 to 4 mg/kg body weight is administered between dialysis sessions (dialysis interval = 72 hours).

Duration of treatment
The duration of treatment depends on the course of the disease. In keeping with the general principles of antibiotic therapy, cefazolin should be continued for at least 2 to 3 days after the fever has subsided or proof is obtained for the eradication of the causative agent.

**Method of administration**
The ready-for-use solution is administered deeply intramuscularly or intravenously (see also section 6.6).

*Intramuscular administration*
For i.m. administration, the medicinal product should be dissolved in 0.5% lidocaine solution.
Intramuscular doses (max. 1 g) should be injected into a major muscle mass.
The i.m. administration should only be used for uncomplicated infections.

Reconstitute with 0.5% lidocaine solution according to the following dilution table:

| Vial size | Amount of diluent |
|---|---|
| 1 g | 4 ml |

*Intravenous administration*
Solutions for i.v. injections or infusions are prepared by dissolving the dry substance in water for injection or 0.9% sodium chloride solution.

Use at least 4 ml of the diluent for each gram of dry substance.

*Intermittent intravenous infusion*
Higher daily doses (4-6 g in 2-3 single doses) are administered by i.v. infusion (over 20 to 30 minutes).

*Direct intravenous injection*
Up to a dose of 1 g cefazolin maybe administered by slow i.v. injection (3-5 minutes) made directly into a vein or through the tubing.

Solutions of cefazolin in lidocaine must not be administered by the intravenous route.

**4.3 Contraindications**
Hypersensitivity to cefazolin or to any of the excipients.
Previous severe hypersensitivity reaction (e.g. anaphylactoid reaction) to any other beta-lactam antibiotic (penicillins, monobactams and carbapenems).
For administration to children <1 year cefazolin should not be dissolved in lidocaine solutions.

**4.4 Special warnings and precautions foruse**
*Hypersensitivity*
Caution is advised in patients with allergic tendencies. Cross-sensitivity between penicillins and cephalosporins has been documented.

As with other beta-lactam antibiotics, serious and occasionally fatal hypersensitivity reactions have been reported. In case a severe hypersensitivity reaction develops, therapy must be discontinued and an appropriate emergency measure must be initiated.
Before initiating therapy with cefazolin, it should be established whether the patients has a history of severe hypersensitivity reactions to cefazolin, to other cephalosporins or any other beta-lactam agents. Cefazolin should be used with caution in patients with a history of non-severe hypersensitivity to other beta-lactam agents.

Serious and occasionally fatal hypersensitivity reactions (including anaphylactoid and severe cutaneous adverse reactions) have been reported in patients receiving therapy with beta-lactams. Before initiating therapy with Cefazolin Sandoz, careful inquiry should be made concerning previous hypersensitivity reactions to penicillins, cephalosporins, carbapenems or any other beta-lactam agents. If an allergic reaction occurs, Cefazolin Sandoz must be discontinued immediately and appropriate alternative therapy instituted.

*Antibiotic-related pseudomembranous colitis*
Severe, sustained diarrhea should promote suspicion of antibiotic-related pseudomembranous colitis. As this condition may be life-threatening, cefazolin should immediately be discontinued and appropriate treatment should be instituted. Antiperistaltics are contraindicated. See also section 4.8.

*Renal impairment*
In patients with reduced renal function the dose levels and/or dose intervals should be adapted to the severity of the renal functional impairment (see section 4.2).

Although cefazolin seldom causes kidney function impairments, it is recommended to examine the kidney function, especially in seriously ill patients, who get maximum amounts administered and in patients who get other potentially nephrotoxic medicinal products administered at the same time, such as aminoglycosides or powerful diuretics (e.g. furosemide).

*Intrathecal administration*
Not for intrathecal use.

Severe intoxication of central nervous system (inclusively convulsions) has been reported following intrathecal administration of cefazolin.

*Bacterial resistance and superinfections*
Long-term treatment with cefazolin can result in cefazolin-resistant bacteria. Patients should be closely monitored for potential superinfections. If these occur, appropriate measures should be taken (also see section 4.8).

*Bleeding disorders*
Exceptionally, blood coagulation may be impaired during cefazolin treatment. Risk factors would be vitamin K deficiency in patients or an effect on other coagulation mechanisms (parenteral nutrition, deficiency in nutrition, hepatic and renal impairment, thrombocytopenia).
Blood clotting may also be disrupted in case of associated diseases (e.g. haemophilia, gastric and duodenal ulcers) that may cause or aggravate bleeding. Quick test readings should, therefore, be monitored in patients presenting with these diseases. If they are reduced, Vitamin K (10 mg/week) should be supplemented.

Children and adolescents
*Prematures and infants below the age of one month*
Cefazolin should not be given to premature and newborn children up to 1 month of age as no data is available and the safety of use has not been established.

In hypertensive patients and in those with heart failure the sodium content of the solutions for injection should be kept in mind (48 mg per 1 g cefazolin).

**4.5 Interaction with other medicinal products and other form of interaction**
*Antibiotics*
Cefazolin should not be used together with antibiotics which have a bacteriostatic mode of action (e.g. tetracyclines, sulfonamides, erythromycin, chloramphenicol) since antagonistic effects were observed in *in vitro* tests.

*Probenecid*

The renal clearance of cefazolin is reduced when probenecid is given in parallel.

*Vitamin K1*
Some cefalosporins such as cefamandol, cefazolin and cefotetan can cause interference in the metabolism of vitamin K1, especially in cases of vitamin K1 deficiency. This may require vitamin K1 supplementation.

*Anticoagulants*
Cephalosporins may very rarely lead to blood clotting disturbances (see section 4.4). During concomitant use with oral anticoagulants (for e.g. warfarin or heparin) in high doses, coagulation parameters should be monitored.

A large number of cases showing an increase of oral anticoagulant activity has been reported in patients receiving antibiotics. The infectious and inflammatory context, age and the general status of the patient appear as risk factors. In these circumstances, it is difficult to know the part of responsibility between the infectious disease and its treatment in the occurrence of INR disorders. However, some classes of antibiotics are more involved, notably fluoroquinolones, macrolides, cyclines, cotrimoxazole and some cephalosporins.

*Nephrotoxic agents*
It cannot be excluded that the nephrotoxic potential of antibiotics (e.g. aminoglycosides, colistin, polymyxin B), iodinated contrast media, organo-platinic compounds, methotrexate in high dose, some antivirals (e.g. ciclovir, foscarnet), pentamidine, cyclosporine, tacrolimus and diuretics (e.g. furosemide) is increased. If concomitantly used with cefazolin, kidney parameters should be carefully monitored.

*Laboratory tests*
Laboratory tests for urinary glucose concentrations may give false positive readings if based on Benedict's solution or Fehling's solutions.
Both the indirect and the direct Coombs test may also give false positive readings, e.g. in newborns whose mothers received cephalosporins.

*Oral contraceptives*
Cefazolin can possibly influence the effectiveness of hormonal contraceptives. For this reason additional contraceptive methods are advised in addition to hormonal contraceptives during treatment with cefazolin.

**4.6 Pregnancy and lactation**
*Pregnancy*
Animal studies do not indicate direct or indirect harmful effects with respect to reproductive toxicity.

As there is insufficient experience on use of cefazolin during pregnancy in humans and as cefazolin passes the placenta, it should only be used during pregnancy, especially during the first trimester, after careful benefit-risk evaluation. It is preferable to avoid the use of cefazolin during the pregnancy unless strictly necessary.

*Breast-feeding*
Cefazolin is excreted in very low concentrations in breast milk. At therapeutic doses, no effects on the infant are expected. If the breast-fed infant develops diarrhoea or candidiasis, breast-feeding should be suspended or cefazolin administration should be interrupted.

*Fertility*
In animal studies, no effect on fertility was observed.

**4.7 Effects on ability to drive and use machines**
No effects on driving and the ability to use machines have been observed. However, side effects may occur (see also section 4.8), which may influence the ability to drive and use machines.

**4.8 Undesirable effects**
Within each frequency grouping, undesirable effects are presented in order of decreasing seriousness.

**Infections and infestations**
*Uncommon*: Oral candidiasis
*Rare*: Genital candidiasis, vaginitis, rhinitis
As with any antibiotic the prolonged use of cefazolin may promote the overgrowth of non-

susceptible organisms.

**Blood and lymphatic system disorders**
*Rare:* Leukopenia, granulocytopenia, neutropenia, thrombocytopenia, leukocytosis, granulocytosis, monocytosis, lymphocytopenia, basophilia and eosinophilia were observed in blood counts. These effects are rare and reversible.
*Very rare:* Coagulation (blood clotting) disorders and bleeding as a consequence (see section 4.4)

**Immune system disorders**
*Uncommon*: Pyrexia
*Very rare:* Anaphylactic shock (swelling of the larynx with narrowing of the airways, increased heart rate, shortness of breath, falling blood pressure, swollen tongue, anal pruritus, genital pruritus, face oedema)

**Metabolism and nutrition disorders**
*Rare:* Hyperglycaemia, hypoglycaemia

**Nervous system disorders**
*Uncommon*: Seizures (in patients with renal dysfunction, with inappropriate high treated doses).
*Rare*: Dizziness

**Vascular disorders**
*Uncommon*: Thrombophlebitis

**Respiratory, thoracic and mediastinal disorders**
*Rare:* Pleural effusion, dyspnoea or respiratory distress, cough

**Gastrointestinal disorders**
*Common*: Nausea, vomiting, diarrhoea
*Rare*: Anorexia
*Very rare*: Pseudomembranous colitis (this condition must immediately be treated in case the diarrhoea can be associated with an antibiotic therapy)

**Hepatobiliary disorders**
*Rare:* Temporary increase in serum concentrations of AST, ALT, alkaline phosphatase, gamma GT, bilirubin and/or LDH, transient hepatitis, transient cholestatic jaundice

**Skin and subcutaneous tissue disorders**
*Common*: Rash
*Uncommon*: Erythema, erythema multiforme, urticaria, angioedema
*Rare*: Toxic epidermal necrolysis, Stevens-Johnson syndrome

**Renal and urinary disorders**
*Rare*: Nephrotoxicity, interstitial nephritis, undefined nephropathy, proteinuria, temporary increase in blood urea nitrogen (BUN) usually in patients treated concomitantly with other potential nephrotoxic medicines.

**Reproductive system and breast disorders**
*Very rare*: Vulvovaginal pruritus

**General disorders and administration site conditions**
*Common*: Pain at the site of intramuscular injection, sometimes with induration
*Rare*: Malaise, fatigue, chest pain

In cases of severe and persistent diarrhoea during or after the treatment with cefazolin a physician should be consulted because this could be the symptom of a serious disease (pseudomembranous colitis) that must be treated immediately. The patients should refrain from any self-medication with peristaltic inhibiting medicinal products (see section 4.4). Prolonged use of a cephalosporin may result in the overgrowth of cefazolin-resistant bacteria, especially Enterobacter, Citrobacter, Pseudomonas, Enterococci, or Candida.
This may lead superinfections or the potential colonisation with resistant organisms or yeasts (see section 4.4).

Studies
Transient increase in SGOT, SGPT, blood urea and alkaline phosphatase without clinical evidence of renal or hepatic damage.
Animal data has shown that a potential nephrotoxicity with cefazolin exists. Although not demonstrated in humans, this possibility should nevertheless be considered especially in patients receiving high doses administered over longer periods. Interstitial nephritis and undefined nephropathies have been reported in rare cases. The patients affected were seriously ill and had several medications administered. The role of cefazolin in the development of interstitial nephritis and other nephropathies has not been established.

In rare cases the following have been reported:
Decreased haemoglobin and/or hematocrit, anaemia, agranulocytosis, aplastic anaemia, pancytopenia and haemolytic anaemia.

The following cases have been reported during treatment with certain cephalosporins:
Nightmares, vertigo, hyperactivity, nervousness or anxiety, insomnia, drowsiness, weakness, hot flushes, disturbed colour vision, confusion and epileptogenic activity.

**4.9 Overdose**
Symptoms of overdose
Overdose may cause pain, inflammatory reactions and phlebitis at the injection site. If administered in very high parenteral doses, cephalosporins may cause vertigo, paraesthesias and headaches. Overdose of cephalosporins can induce convulsions especially in patients with renal disease.

An overdose may be associated with abnormal results in the following laboratory tests: increased creatinine, BUN, liver enzymes and bilirubin, positive Coombs test, thrombocythaemia and thrombocytopenia, eosinophilia, leukopenia, and prolongation of prothrombin time.

Treatment of overdose
In case of seizures, administration of the medicinal product should be discontinued immediately. Antiepileptic medicinal products may be appropriate. Vital body functions and parameters should be monitored closely. In case of a severe overdose where the patient is unresponsive to other treatments, haemodialysis with haemoperfusion may be effective, although the proof is not provided.

**5. PHARMACOLOGICAL PROPERTIES**
**5.1 Pharmacodynamic Properties**
Pharmacotherapeutic group: Antibacterials for systemic use, other beta-lactam antibacterials, first-generation cephalosporins
ATC code: J01DB04

Mode of action
Cefazolin inhibit cell wall synthesis (in the growth stage) through blocking the penicillin-binding proteins (PBPs) like transpeptidases. The outcome is a bactericidal action.

Pharmacokinetic/pharmacodynamic relationship
Efficacy mainly depends on the interval in which cefazolin serum levels remain above the minimum inhibitory concentration (MIC) for the pathogen.
Mechanisms of resistance
Resistance to cefazolin can rest upon one of the following mechanisms:
- Inactivation by beta-lactamases: cefazolin has a high stability against penicillinases of gram-positive bacteria, but only a low stability against plasmid-coded betalactamases, e.g. extended-spectrum beta-lactamases (ESBLs) or chromosomal-coded betalactamases of AmpC-type.
- Reduced affinity of the PBPs to cefazolin: the acquired resistance of pneumococci and other streptococci is caused by modifications of the available PBPs due to mutations. The resistance of methicillin (oxacillin)-resistant Staphylococci is due to the formation of an additional PBP with a lower affinity to cefazolin.
- Insufficient penetration of cefazolin through the outer cell wall of gram-negative bacteria can lead to an insufficient inhibition of the PBPs.
- Cefazolin can be transported outside the cell through efflux pumps.

There is a partial or total cross-resistance of cefazolin with other cephalosporins and penicillins.

Breakpoints
Standard serial dilutions are used for the testing of cefazolin. The following minimum inhibitory concentrations for sensitive and resistant bacteria have been identified:

EUCAST (European Committee on Antimicrobial Susceptibility Testing) breakpoints (2015-01-01; version 5.0):

| Species | Susceptibility | Resistance |
|---|---|---|
| *Staphylococcus* spp. | -* | -* |
| Streptococcus groups A, B, C and G | -** | -** |
| Viridans group streptococci | ≤0.5 mg/l | >0.5 mg/l |
| PK/PD (Non-species related) breakpoints | ≤1 mg/l | >2 mg/l |

*Susceptibility of staphylococci to cephalosporins is inferred from the cefoxitin susceptibility except for ceftazidime, cefixime and ceftibuten, which do not have breakpoints and should not be used for staphylococcal infections. Some methicillin-resistant S. aureus are susceptible to ceftaroline and ceftobiprole; Methicillin-susceptible isolates can be reported susceptible to ceftaroline and ceftobiprole without further testing.
**The susceptibility of streptococcus groups A, B, C and G to cephalosporins is inferred from the benzylpenicillin susceptibility

Susceptibility
The prevalence of acquired resistance may vary geographically and with time for selected species and local information is desirable, particularly when treating severe infections. If necessary, expert advice should be sought when the local prevalence of resistance is such that the efficacy of cefazolin is questionable.

**Commonly susceptible species**
Gram positive aerobes
*Staphylococcus aureus* (methicillin-sensitive) °
*Staphylococcus saprophyticus* °
*Streptococcus agalactiae* °
*Streptococcus pneumoniae*
*Streptococcus pyogenes* °

**Species for which acquired resistance may be a problem**
Gram positive aerobes
*Staphylococcus aureus* *
*Staphylococcus epidermidis* **
*Staphylococcus haemolyticus* **
*Staphylococcus hominis* **
*Staphylococcus pneumoniae* (penicillin-intermediär)

Gram-negative aerobes
*Escherichia coli*
*Haemophilus influenzae* ***
*Klebsiella oxytoca* ****
*Klebsiella pneumoniae*
*Proteus mirabilis*

**Inherently resistant species**
Gram positive aerobes
*Enterococcus* spp.
*Staphylococcus aureus* (methicillin-sensitive)
*Staphylococcus pneumoniae* (penicillin-resistant)

Gram negative aerobes
*Acinetobacter baumanii*

*Citrobacter freundii*
*Enterobacter* spp.
*Morganella morganii*
*Moraxella catarrhalis*
*Proteus vulgaris*
*Pseudomonas aeruginosa*
*Serratia marcescens*
*Stenotrophomonas maltophilia*

Anaerobes
*Bacteroides fragilis*

Other microorganisms
*Chlamydia* spp.
*Chlamydophila* spp.
*Legionella* spp.
*Mycoplasma* spp.

°In primary literature, standard references and treatment recommendations susceptibility is assumed
*Inherent susceptibility of most isolates is within the intermediate range
**Frequency of resistance is >50% at least in one region
**No current data available; in studies (older than 5 years) frequency of resistant strains is stated to be >50%
****Frequency of resistance is <10% within the outpatient sector

Other information
Penicillin-resistant *Streptococcus pneumoniae* are cross-resistant to cephalosporins such as cefazolin.

**5.2 Pharmacokinetic properties**
Cefazolin is applied parenterally. Maximum serum levels after i.m. injection are reached after 30 to 75 minutes.

Serum concentration (µg/ml) after intramuscular administration

| Dose | 30 min | 1 h | 2 h | 4 h | 6 h | 8 h |
|---|---|---|---|---|---|---|
| 500 mg<br>1 g | 36.2<br>60.1 | 36.8<br>63.8 | 37.9<br>54.3 | 15.5<br>29.3 | 6.3<br>13.2 | 3<br>7.1 |

Serum concentration (µg/ml) after intravenous administration of 1 g

| 5 min | 15 min | 30 min | 1 h | 2 h | 4 h |
|---|---|---|---|---|---|
| 188.4 | 135.8 | 106.8 | 73.7 | 45.6 | 16.5 |

About 65 - 92 % of cefazolin is bound to plasma proteins. Cefazolin penetrates very well into tissues including skeletal muscle, myocardial tissue, bone tissue, bile and gallbladder tissue, endometrium and vaginal tissue. Cefazolin passes the placenta barrier and is also excreted into the milk.

Diffusion into liquor cerebrospinalis and aqueous fluid is not sufficient.

Cefazolin is not metabolised. Most of the dose applied undergoes glomerular filtration and is eliminated with the urine in a microbiologically active form. A smaller part is excreted by bile. The plasma elimination half-life is about 2 hours; in patients with renal impairment, this time can be prolonged.

**6. PHARMACEUTICAL PARTICULARS**
**6.1 List of excipients**
None.

**6.2 Incompatibilities**
Cefazolin is incompatible with amikacin disulfate, amobarbital sodium, ascorbic acid, bleomycin sulfate, calcium glucoheptonate, calcium gluconate, cimetidine hydrochloride, colistin methane sulfonate sodium, erythromycin

glucoheptonate, kanamycin sulfate, oxytetracyclin hydrochloride, pentobarbital sodium, polymyxin B sulfate and tetracycline hydrochloride.

**6.3 Shelf life**

*Before reconstitution*

If properly stored, Cefazolin Sandoz retains its full potency up to the date of expiration shown on the pack.
Shelf life: 2 years.

*After reconstitution*

***From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would normally not be longer than 24 hours at 2 to 8°C, unless reconstitution has taken place in controlled and validated aseptic conditions.***

**6.4 Storage conditions**

Powder for solution for injection/infusion: Store below 30°C, protect from light. Keep container in outer carton.

Reconstituted solution: Store in a refrigerator (2 - 8°C).

**6.5 Presentations**

Cefazolin Sandoz 1g: single packs of 1 vial, hospital packs (10 and 50 vials).
White to light yellow powder.

**6.6 Special precautions for disposal and other handling**

Solutions for i.v. injections are prepared by dissolving the dry substance in water for injection or 0.9% sodium chloride solution. Use at least 4 ml of the diluent for each gram of dry substance.
Intramuscular doses should be injected into a major muscle mass.
For i.m. administration the medicinal product should be dissolved in 0.5% lidocaine solution. Dissolve 500 mg of the dry substance in 2 ml of the diluent and 1 g of the dry substance in 4 ml of the diluent.

For preparing solutions for i.v. infusion fill up the infusion bottle with 50-100 ml 0.9% sodium chloride solution, allow dry substance to dissolve and infuse slowly.

Only use freshly prepared, clear and colourless solutions. Withdraw only one dose.
Any unused solution should be discarded.

Inspect the reconstituted solution visually for particulate matter and for discoloration prior to administration. The reconstituted solution is clear.

**7. MANUFACTURER**

Sandoz GmbH,
A-6250 Kundl,
Austria.

**8. PRODUCT REGISTRATION HOLDER**

Sandoz Products Malaysia Sdn. Bhd.
Unit 1202, Level 12, Uptown 1,
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47400 Petaling Jaya Selangor, Malaysia.

**9. DATE OF REVISION OF THE TEXT**

Jan 2024