

# CEFAZOLIN FOR INJECTION, USP

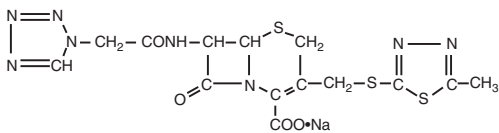
Rx only

To reduce the development of drug-resistant bacteria and maintain the effectiveness of Cefazolin for Injection, USP and other antibacterial drugs, Cefazolin for Injection, USP should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria.

## DESCRIPTION:

Cefazolin for Injection, USP is a semi-synthetic cephalosporin for parenteral administration. It is 5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid, 3-[[[(5-methyl-1,3,4-thiadiazol-2-yl)thio]-methyl]-8-oxo-7-[[[(1H-tetrazol-1-yl)acetyl]amino]-, monosodium salt (6R-*trans*). The sodium content is 48mg/g of cefazolin sodium.

The structural formula is as follows:


 $C_{14}H_{13}N_8NaO_4S_3$ 

M.W. 476.5

The pH of the constituted solution is between 4.5 and 6.

Cefazolin for Injection, USP is supplied in 1 gram vials. Each vial contains cefazolin sodium equivalent to 1 gram of cefazolin. It is to be administered by intramuscular or intravenous routes

## CLINICAL PHARMACOLOGY:

After intramuscular administration of cefazolin to normal volunteers, the mean serum concentrations were 37 mcg/mL at 1 hour and 3 mcg/mL at 8 hours following a 500 mg dose, and 64 mcg/mL at 1 hour and 7 mcg/mL at 8 hours following a 1 gram dose.

Studies have shown that following intravenous administration of cefazolin to normal volunteers, mean serum concentrations peaked at approximately 185 mcg/mL and were approximately 4 mcg/mL at 8 hours for a 1 gram dose.

The serum half-life for cefazolin is approximately 1.8 hours following IV administration and approximately 2 hours following IM administration.

In a study (using normal volunteers) of constant intravenous infusion with dosages of 3.5 mg/kg for 1 hour (approximately 250 mg) and 1.5 mg/kg the next 2 hours (approximately 100 mg), cefazolin produced a steady serum level at the third hour of approximately 28 mcg/mL.

Studies in patients hospitalized with infections indicate that cefazolin produces mean peak serum concentrations approximately equivalent to those seen in normal volunteers.

Bile concentrations in patients without obstructive biliary disease can reach or exceed serum concentrations by up to five times; however, in patients with obstructive biliary disease, bile concentrations of cefazolin are considerably lower than serum concentrations (< 1 mcg/mL).

In synovial fluid, the cefazolin concentration becomes comparable to that reached in serum at about 4 hours after drug administration.

Studies of cord blood show prompt transfer of cefazolin across the placenta. Cefazolin is present in very low concentrations in the milk of nursing mothers.

Cefazolin is excreted unchanged in the urine. In the first 6 hours approximately 60% of the drug is excreted in the urine and this increases to 70 to 80% within 24 hours. Cefazolin achieves peak urine concentrations of approximately 2400 mcg/mL and 4000 mcg/mL respectively following 500 mg and 1 gram intramuscular doses.

In patients undergoing peritoneal dialysis (2 L/hr.), cefazolin produced mean serum levels of approximately 10 and 30 mcg/mL after 24 hours' instillation of a dialyzing solution containing 50 mg/L and 150 mg/L, respectively. Mean peak levels were 29 mcg/mL (range 13 to 44 mcg/mL) with 50 mg/L (three patients), and 72 mcg/mL (range 26 to 142 mcg/mL) with 150 mg/L (six patients). Intraperitoneal administration of cefazolin is usually well tolerated.

Controlled studies on adult normal volunteers, receiving 1 gram 4 times a day for 10 days, monitoring CBC, AST (SGOT), ALT (SGPT), bilirubin, alkaline phosphatase, BUN, creatinine and urinalysis, indicated no clinically significant changes attributed to cefazolin.

## Microbiology

*In vitro* tests demonstrate that the bactericidal action of cephalosporins results from inhibition of cell wall synthesis. Cefazolin has been shown to be active against the following organisms both *in vitro* and in clinical infections as described in the **INDICATIONS AND USAGE** section:

### Aerobic Gram-positive microorganisms

*Staphylococcus aureus* (including penicillinase-producing strains)  
*Staphylococcus epidermidis*  
*Streptococcus pneumoniae*  
*Streptococcus pyogenes* and other strains of Streptococci

NOTE: Methicillin-resistant staphylococci are uniformly resistant to cefazolin. Many *Enterococcus* strains are resistant to cefazolin.

### Aerobic Gram-negative microorganisms

*Escherichia coli*  
*Haemophilus influenzae*  
*Klebsiella* species  
*Proteus mirabilis*

NOTE: Most strains of indole-positive *Proteus* (*Proteus vulgaris*), *Enterobacter cloacae*, *Morganella morganii*, and *Providencia rettgeri* are resistant. *Serratia*, *Pseudomonas*, *Mima*, *Herellea* are almost uniformly resistant to cefazolin.

## Susceptibility Testing

**Dilution Techniques** - Quantitative methods are used to determine antimicrobial minimum inhibitory concentrations (MICs). These MICs provide estimates of the susceptibility of bacteria to antimicrobial compounds. The MICs should be determined using a standardized procedure. Standardized procedures are based on a dilution method<sup>1</sup> (broth) or equivalent with standardized inoculum concentrations and standardized concentrations of cefazolin powder. The MIC values should be interpreted according to the following criteria:

For Enterobacteriaceae and *Staphylococcus* spp.

MIC (mcg/mL)	Interpretation
< 8	Susceptible (S)
16	Intermediate (I)
> 32	Resistant (R)

A report of "Susceptible" indicates that the pathogen is likely to be inhibited if the antimicrobial compound in the blood reaches the concentrations usually achievable. A report of "Intermediate" indicates that the result should be considered equivocal, and, if the microorganism is not fully susceptible to alternative, clinically feasible drugs, the test should be repeated. This category implies possible clinical applicability in body sites where the drug is physiologically concentrated or in situations where high dosage of drug can be used. This category also provides a buffer zone which prevents small uncontrolled technical factors from causing major discrepancies in interpretation. A report of "Resistant" indicates that the pathogen is not likely to be inhibited if the antimicrobial compound in the blood reaches the concentrations usually achievable; other therapy should be selected.

Standardized susceptibility test procedures require the use of laboratory control microorganisms to control the technical aspects of the laboratory procedures. Standard cefazolin powder should provide the following MIC values:

Microorganism	MIC (mcg/mL)
<i>S. aureus</i> ATCC 29213	0.25 to 1.0
<i>E. coli</i> ATCC 25922	1.0 to 4.0

**Diffusion Techniques** - Quantitative methods that require measurement of zone diameters also provide reproducible estimates of the susceptibility of bacteria to antimicrobial compounds. One such standardized procedure<sup>2</sup> requires the use of standardized inoculum concentrations. This procedure uses paper disks impregnated with 30-mcg cefazolin to test the susceptibility of microorganisms to cefazolin.

Reports from the laboratory providing results of the standard single-disk susceptibility test with a 30-mcg cefazolin disk should be interpreted according to the following criteria:

For Enterobacteriaceae using the 30-mcg cefazolin disk

Zone diameter (mm)	Interpretation
> 18	Susceptible (S)
15 to 17	Intermediate (I)
< 14	Resistant (R)

For *Staphylococcus* spp. using the 30-mcg cefazolin or the 30-mcg cephalothin disks

Zone diameter (mm)	Interpretation
> 18	Susceptible (S)
15 to 17	Intermediate (I)
< 14	Resistant (R)

Interpretation should be as stated above for results using dilution techniques. Interpretation involves correlation of the diameter obtained in the disk test with the MIC for cefazolin.

As with standardized dilution techniques, diffusion methods require the use of laboratory control microorganisms that are used to control the technical aspects of the laboratory procedures. For the diffusion technique, the 30-mcg cefazolin disk should provide the following zone diameters in this laboratory test quality control strain:

Microorganism	Zone diameter (mm)
<i>S. aureus</i> ATCC 25923	29 to 35
<i>E. coli</i> ATCC 25922	23 to 29

## INDICATIONS AND USAGE:

Cefazolin for Injection is indicated in the treatment of the following serious infections due to susceptible organisms:

**Respiratory Tract Infections** due to *Streptococcus pneumoniae*, *Klebsiella* species, *Haemophilus influenzae*, *Staphylococcus aureus* (penicillin-sensitive and penicillin-resistant) and group A beta-hemolytic streptococci.

Injectable benzathine penicillin is considered to be the drug of choice in treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever.

Cefazolin is effective in the eradication of streptococci from the nasopharynx; however, data establishing the efficacy of cefazolin in the subsequent prevention of rheumatic fever are not available at present.

**Urinary Tract Infections** due to *Escherichia coli*, *Proteus mirabilis*, *Klebsiella* species and some strains of enterobacter and enterococci.

**Skin and Skin Structure Infections** due to *Staphylococcus aureus* (penicillin-sensitive and penicillin-resistant), group A beta-hemolytic streptococci and other strains of streptococci.

**Biliary Tract Infections** due to *Escherichia coli*, various strains of streptococci, *Proteus mirabilis*, *Klebsiella* species, and *Staphylococcus aureus*.

**Bone and Joint Infections** due to *Staphylococcus aureus*.

**Genital Infections** (i.e., prostatitis, epididymitis) due to *Escherichia coli*, *Proteus mirabilis*, *Klebsiella* species and some strains of enterococci.

**Septicemia** due to *Streptococcus pneumoniae*, *Staphylococcus aureus* (penicillin-sensitive and penicillin-resistant), *Proteus mirabilis*, *Escherichia coli* and *Klebsiella* species.

**Endocarditis** due to *Staphylococcus aureus* (penicillin-susceptible and penicillin-resistant) and group A beta-hemolytic streptococci.

**Perioperative Prophylaxis:** The prophylactic administration of cefazolin preoperatively, intraoperatively and postoperatively may reduce the incidence of certain postoperative infections in patients undergoing surgical procedures which are classified as contaminated or potentially contaminated (e.g., vaginal hysterectomy, and cholecystectomy in high-risk patients such as those over than 70 years of age, with acute cholecystitis, obstructive jaundice or common bile duct stones). The perioperative use of cefazolin may also be effective in surgical patients in whom infection at the operative site would present a serious risk (e.g., during open-heart surgery and prosthetic arthroplasty).

The prophylactic administration of cefazolin should usually be discontinued within a 24 hour period after the surgical procedure. In surgery where the occurrence of infection may be particularly devastating (e.g., open-heart surgery and prosthetic arthroplasty), the prophylactic administration of cefazolin may be continued for 3 to 5 days following the completion of surgery.

If there are signs of infection, specimens for cultures should be obtained for the identification of the causative organism so that appropriate therapy may be instituted (see **DOSE AND ADMINISTRATION**).

To reduce the development of drug-resistant bacteria and maintain the effectiveness of Cefazolin for Injection, USP and other antibacterial drugs, Cefazolin for Injection, USP should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

## CONTRAINDICATIONS:

CEFAZOLIN IS CONTRAINDICATED IN PATIENTS WITH KNOWN ALLERGY TO THE CEPHALOSPORIN GROUP OF ANTIBIOTICS.

## WARNINGS:

BEFORE THERAPY WITH CEFAZOLIN IS INSTITUTED, CAREFUL INQUIRY SHOULD BE MADE TO DETERMINE WHETHER THE PATIENT HAS HAD PREVIOUS HYPERSENSITIVITY REACTIONS TO CEFAZOLIN, CEPHALOSPORINS, PENICILLINS, OR OTHER DRUGS. IF THIS PRODUCT IS GIVEN TO PENICILLIN-SENSITIVE PATIENTS, CAUTION SHOULD BE EXERCISED BECAUSE CROSS-HYPERSENSITIVITY AMONG BETA-LACTAM ANTIBIOTICS HAS BEEN CLEARLY DOCUMENTED AND MAY OCCUR IN UP TO 10% OF PATIENTS WITH A HISTORY OF PENICILLIN ALLERGY. IF AN ALLERGIC REACTION TO CEFAZOLIN OCCURS, DISCONTINUE TREATMENT WITH THE DRUG. SERIOUS ACUTE HYPERSENSITIVITY REACTIONS MAY REQUIRE TREATMENT WITH EPINEPHRINE AND OTHER EMERGENCY MEASURES, INCLUDING OXYGEN, IV FLUIDS, IV ANTIHISTAMINES, CORTICOSTEROIDS, PRESSOR AMINES AND AIRWAY MANAGEMENT, AS CLINICALLY INDICATED.

**Pseudomembranous colitis has been reported with nearly all antibacterial agents, including cefazolin, and may range in severity from mild to life-threatening. Therefore, it is important to consider this diagnosis in patients who present with diarrhea subsequent to the administration of antibacterial agents.**

Treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is a primary cause of "antibiotic-associated colitis."

After the diagnosis of pseudomembranous colitis has been established, therapeutic measures should be initiated. Mild cases of pseudomembranous colitis usually respond to drug discontinuation alone. In moderate to severe cases, consideration should be given to management with fluids and electrolytes, protein supplementation and treatment with an oral antibacterial drug clinically effective against *C. difficile* colitis.

## PRECAUTIONS:

### General

Prolonged use of cefazolin may result in overgrowth of nonsusceptible organisms. Careful clinical observation of the patient is essential.

When cefazolin is administered to patients with low urinary output because of impaired renal function, lower daily dosage is required (see **DOSE AND ADMINISTRATION**).

As with other beta-lactam antibiotics, seizures may occur if inappropriately high doses are administered to patients with impaired renal function (see **DOSE AND ADMINISTRATION**).

Cefazolin, as with all cephalosporins, should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Cephalosporins may be associated with a fall in prothrombin activity. Those at risk include patients with renal or hepatic impairment or poor nutritional state, as well as patients receiving a protracted course of antimicrobial therapy, and patients previously stabilized on anticoagulant therapy. Prothrombin time should be monitored in patients at risk and exogenous vitamin K administered as indicated.

Prescribing cefazolin in the absence of a proven or strongly suspected bacterial infection or a prophylactic indication is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria.

### Information for Patients

Patients should be counseled that antibacterial drugs including cefazolin should only be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When cefazolin is prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of therapy, the medication should be taken exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by cefazolin or other antibacterial drugs in the future.

### Drug Interactions

Probenecid may decrease renal tubular secretion of cephalosporins when used concurrently, resulting in increased and more prolonged cephalosporin blood levels.

### Drug/Laboratory Test Interactions

A false-positive reaction for glucose in the urine may occur with Benedict's solution, Fehling's solution or with Clinistest<sup>®</sup> tablets, but not with enzyme-based tests such as Clinistix<sup>®</sup>. Positive direct and indirect antiglobulin (Coombs) tests have occurred; these may also occur in neonates whose mothers received cephalosporins before delivery.

### Carcinogenesis/Mutagenesis

Mutagenicity studies and long-term studies in animals to determine the carcinogenic potential of cefazolin have not been performed.

### Pregnancy

**Teratogenic Effects** - Pregnancy Category B. Reproduction studies have been performed in rats, mice and rabbits at doses up to 25 times the human dose and have revealed no evidence of impaired fertility or harm to the fetus due to cefazolin. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

### Labor and Delivery

When cefazolin has been administered prior to caesarean section, drug levels in cord blood have been approximately one quarter to one third of maternal drug levels. The drug appears to have no adverse effect on the fetus.

### Nursing Mothers

Cefazolin is present in very low concentrations in the milk of nursing mothers. Caution should be exercised when cefazolin is administered to a nursing woman.

### Pediatric Use

Safety and effectiveness for use in premature infants and neonates have not been established. See **DOSAGE AND ADMINISTRATION** for recommended dosage in pediatric patients over 1 month.

### Geriatric Use

Of the 920 subjects who received cefazolin in clinical studies, 313 (34%) were 65 years and over, while 138 (15%) were 75 years and over. No overall differences in safety or effectiveness were observed between these subjects and younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function (see **PRECAUTIONS, General** and **DOSAGE AND ADMINISTRATION**).

### ADVERSE REACTIONS:

The following reactions have been reported:

**Gastrointestinal:** Diarrhea, oral candidiasis (oral thrush), vomiting, nausea, stomach cramps, anorexia and pseudomembranous colitis. Onset of pseudomembranous colitis symptoms may occur during or after antibiotic treatment (see **WARNINGS**). Nausea and vomiting have been reported rarely.

**Allergic:** Anaphylaxis, eosinophilia, itching, drug fever, skin rash, Stevens-Johnson syndrome.

**Hematologic:** Neutropenia, leukopenia, thrombocytopenia, thrombocytopenia.

**Hepatic:** Transient rise in SGOT, SGPT and alkaline phosphatase levels has been observed. As with other cephalosporins, reports of hepatitis have been received.

**Renal:** As with other cephalosporins, reports of increased BUN and creatinine levels, as well as renal failure, have been received.

**Local Reactions:** Rare instances of phlebitis have been reported at site of injection. Pain at the site of injection after intramuscular administration has occurred infrequently. Some induration has occurred.

**Other Reactions:** Genital and anal pruritus (including vulvar pruritus, genital moniliasis, and vaginitis).

**Cephalosporin-class Adverse Reactions:** In addition to the adverse reactions listed above that have been observed in patients treated with cefazolin, the following adverse reactions and altered laboratory tests have been reported for cephalosporin-class antibiotics:

Adverse Reactions: Allergic reactions, urticaria, serum sickness-like reaction, erythema multiforme, toxic epidermal necrolysis, colitis, renal dysfunction, toxic nephropathy, abdominal pain, reversible hyperactivity, hypertonia, hepatic dysfunction including cholestasis, aplastic anemia, hemolytic anemia, hemorrhage, and superinfection.

Altered Laboratory Tests: Prolonged prothrombin time, positive direct Coombs' test, false-positive test for urinary glucose, elevated bilirubin, elevated LDH, increased creatinine, pancytopenia, and agranulocytosis. Several cephalosporins have been implicated in triggering seizures, particularly in patients with renal impairment when the dosage was not reduced (see **DOSAGE AND ADMINISTRATION**). If seizures associated with drug therapy occur, the drug should be discontinued. Anticonvulsant therapy can be given if clinically indicated.

### DOSAGE AND ADMINISTRATION:

#### Usual Adult Dosage

Type of Infection	Dose	Frequency
Moderate to severe infections	500 mg to 1 gram	every 6 to 8 hours
Mild infections caused by susceptible gram-positive cocci	250 mg to 500 mg	every 8 hours
Acute, uncomplicated urinary tract infections	1 gram	every 12 hours
Pneumococcal pneumonia	500 mg	every 12 hours
Severe, life-threatening infections (e.g., endocarditis, septicemia)*	1 gram to 1.5 grams	every 6 hours

\* In rare instances, doses of up to 12 grams of cefazolin per day have been used.

### Perioperative Prophylactic Use

To prevent postoperative infection in contaminated or potentially contaminated surgery, the recommended doses are:

- 1 gram IV or IM administered one half to 1 hour prior to the start of surgery.
- For lengthy operative procedures (e.g., 2 hours or more), 500 mg to 1 gram IV or IM during surgery (administration modified depending on the duration of the operative procedure).
- 500 mg to 1 gram IV or IM every 6 to 8 hours for 24 hours postoperatively.

It is important that (1) the preoperative dose be given just prior (one half to 1 hour) to the start of surgery so that adequate antibiotic levels are present in the serum and tissues at the time of initial surgical incision and (2) cefazolin be administered, if necessary, at appropriate intervals during surgery to provide sufficient levels of the antibiotic at the anticipated moments of greatest exposure to infective organisms. In surgery where the occurrence of infection may be particularly devastating (e.g., open heart surgery and prosthetic arthroplasty), the prophylactic administration of cefazolin may be continued for 3 to 5 days following the completion of surgery.

### Dosage Adjustment for Patients With Reduced Renal Function

Cefazolin may be used in patients with reduced renal function with the following dosage adjustments. Patients with a creatinine clearance of 55 mL/min or greater or a serum creatinine of 1.5 mg % or less can be given full doses. Patients with creatinine clearance rates of 35 to 54 mL/min or serum creatinine of 1.6 to 3 mg % can also be given full doses but dosage should be restricted to at least 8 hour intervals. Patients with creatinine clearance rates of 11 to 34 mL/min or serum creatinine of 3.1 to 4.5 mg % should be given one half the usual dose every 12 hours. Patients with creatinine clearance rates of 10 mL/min or less or serum creatinine 4.6 mg % or greater should be given one half the usual dose every 18 to 24 hours. All reduced dosage recommendations apply after an initial loading dose appropriate to the severity of the infection. Patients undergoing peritoneal dialysis, see **CLINICAL PHARMACOLOGY**.

### Pediatric Dosage

In pediatric patients, a total daily dosage of 25 to 50 mg/kg (approximately 10 to 20 mg/lb) of body weight, divided into 3 or 4 equal doses, is effective for most mild to moderately severe infections. Total daily dosage may be increased to 100 mg/kg (45 mg/lb) of body weight for severe infections. Since safety for use in premature infants and in neonates has not been established, the use of cefazolin in these patients is not recommended.

#### Pediatric Dosage Guide

Weight		25 mg/kg/Day Divided into 3 Doses	
lbs	kg	Approximate Single Dose mg/q8h	Vol (mL) needed with dilution of 125 mg/mL
10	4.5	40 mg	0.35 mL
20	9	75 mg	0.6 mL
30	13.6	115 mg	0.9 mL
40	18.1	150 mg	1.2 mL
50	22.7	190 mg	1.5 mL

Weight		25 mg/kg/Day Divided into 4 Doses	
lbs	kg	Approximate Single Dose mg/q6h	Vol (mL) needed with dilution of 125 mg/mL
10	4.5	30 mg	0.25 mL
20	9	55 mg	0.45 mL
30	13.6	85 mg	0.7 mL
40	18.1	115 mg	0.9 mL
50	22.7	140 mg	1.1 mL

Weight		50 mg/kg/Day Divided into 3 Doses	
lbs	kg	Approximate Single Dose mg/q8h	Vol (mL) needed with dilution of 225 mg/mL
10	4.5	75 mg	0.35 mL
20	9	150 mg	0.7 mL
30	13.6	225 mg	1 mL
40	18.1	300 mg	1.35 mL
50	22.7	375 mg	1.7 mL

Weight		50 mg/kg/Day Divided into 4 Doses	
lbs	kg	Approximate Single Dose mg/q6h	Vol (mL) needed with dilution of 225 mg/mL
10	4.5	55 mg	0.25 mL
20	9	110 mg	0.5 mL
30	13.6	170 mg	0.75 mL
40	18.1	225 mg	1 mL
50	22.7	285 mg	1.25 mL

In pediatric patients with mild to moderate renal impairment (creatinine clearance of 70 to 40 mL/min), 60% of the normal daily dosage given in equally divided doses every 12 hours should be sufficient. In patients with moderate impairment (creatinine clearance of 40 to 20 mL/min), 25% of the normal daily dose given in equally divided doses every 12 hours should be adequate. Pediatric patients with severe renal impairment (creatinine clearance of 20 to 5 mL/min) may be given 10% of the normal daily dose every 24 hours. All dosage recommendations apply after an initial loading dose.

### RECONSTITUTION:

#### Preparation of Parenteral Solution

Parenteral drug products should be SHAKEN WELL when reconstituted, and inspected visually for particulate matter prior to administration. If particulate matter is evident in reconstituted fluids, the drug solutions should be discarded.

When reconstituted or diluted according to the instructions below, cefazolin is stable for 24 hours at room temperature or for 10 days if stored under refrigeration (5°C or 41°F). Reconstituted solutions may range in color from pale yellow to yellow without a change in potency.

#### Single-Dose Vials

For IM injection, IV direct (bolus) injection or IV infusion, reconstitute with Sterile Water for Injection according to the following table. SHAKE WELL.

Vial Size	Amount of Diluent	Approximate Concentration	Approximate Available Volume
1 gram	2.5 mL	330 mg/mL	3 mL

### ADMINISTRATION:

#### Intramuscular Administration

Reconstitute vials with Sterile Water for Injection according to the dilution table above. Shake well until dissolved. Cefazolin for Injection, USP should be injected into a large muscle mass. Pain on injection is infrequent with Cefazolin for Injection, USP.

#### Intravenous Administration

**Direct (bolus) injection** - Following reconstitution according to the above table, further dilute vials with approximately 5 mL Sterile Water for Injection. Inject the solution slowly over 3 to 5 minutes, directly or through tubing for patients receiving parenteral fluids (see list below).

**Intermittent or continuous infusion** - Dilute reconstituted Cefazolin for Injection, USP in 50 to 100 mL of one of the following solutions: Sodium Chloride Injection, USP

5% or 10% Dextrose Injection, USP  
5% Dextrose in Lactated Ringer's Injection, USP  
5% Dextrose and 0.9% Sodium Chloride Injection, USP  
5% Dextrose and 0.45% Sodium Chloride Injection, USP  
5% Dextrose and 0.2% Sodium Chloride Injection, USP  
Lactated Ringer's Injection, USP  
Invert Sugar 5% or 10% in Sterile Water for Injection  
Ringer's Injection, USP  
5% Sodium Bicarbonate Injection, USP

Prior to administration parenteral drug products should be inspected visually for particulate matter and discoloration whenever solution and container permit.

### HOW SUPPLIED:

Product No.	NDC No.	Cefazolin for Injection, USP	Vial Size
10110	25021-101-10	1 gram	10 mL

Cefazolin for Injection, USP is supplied in 1 gram vials. Each vial contains cefazolin sodium equivalent to 1 gram of cefazolin and is packaged 25 vials per tray.

Preservative Free.

As with other cephalosporins, Cefazolin for Injection, USP tends to darken depending on storage conditions; within the stated recommendations, however, product potency is not adversely affected.

Before reconstitution protect from light and store at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature].

Non-latex.

### REFERENCES:

- National Committee for Clinical Laboratory Standards, Method for Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically- Fifth Edition. Approved Standard NCCLS Document M7-A4, Vol. 20, No. 2, NCCLS, Wayne, PA, January 2000.
- National Committee for Clinical Laboratory Standards, Performance Standards for Antimicrobial Disk Susceptibility Tests - Seventh Edition. Approved Standard NCCLS Document M2-A7, Vol. 20, No. 1, NCCLS, Wayne, PA, January 2000.

Manufactured for SAGENT Pharmaceuticals, Inc.  
Schaumburg, IL 60195 (USA)  
Made in Brazil



SAGENT™

October 2007