AMOXICILLIN and CLAVULANATE POTASSIUM for Oral Suspension

---- INDICATIONS AND USAGE ------ $A moxicillin\ and\ clavulanate\ potassium\ for\ oral\ suspension\ is\ a\ combination\ of\ a moxicillin,\ a$ penicillin-class antibacterial and clavulanate potassium, a beta-lactamase inhibitor indicated for treatment of the following infections in adults and pediatric patients: (1) Acute bacterial otitis media

· Skin and skin structure infections

Limitations of Use When susceptibility test results show susceptibility to amoxicillin, indicating no beta-lactamase production, Amoxicillin and clavulanate potassium should not be used. (1)

To reduce the development of drug-resistant bacteria and maintain the effectiveness of potassium should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria. (1)

DOSAGE AND ADMINISTRATION -- Adults and Pediatric Patients greater than 40 kg: 500 or 875 mg every 12 hours or 250 or 500 mg every 8 hours, based on amoxicillin component. (2.2, 2.3)
Pediatric patients aged 12 weeks (3 months) and older: 25 to 45 mg/kg/day every 12 hours or 20 to 40 mg/kg/day every 8 hours, up to the adult dose. (2.3) Neonates and infants less than 12 weeks of age: 30 mg/kg/day divided every 12 hours, based on the amoxicillin component. Use of the 125 mg/5 mL oral suspension is recommended. (2.3) --- DOSAGE FORMS AND STRENGTHS -----

For Oral Suspension: 400 mg/57 mg per 5 mL (3) ---- CONTRAINDICATIONS ----

 History of a serious hypersensitivity reaction (e.g., anaphylaxis or Stevens-Johnson syndrome) to amoxicillin and clavulanate potassium or to other beta-lactams (e.g., penicillins or cephalosporins) (4.1)

History of cholestatic jaundice/hepatic dysfunction associated with amoxicillin and clavulanate 6 potassium. (4.2)

Serious (including fatal) hypersensitivity reactions: Discontinue amoxicillin and clavulanate potassium if a reaction occurs. (5.1) re Cutaneous Adverse Reactions (SCAR): Monitor closely. Discontinue if rash progresses.

Drug-induced enterocolitis syndrome (DIES) has been reported with use of amoxicillin, a component of amoxicillin and clavulanate potassium. If this occurs, discontinue amoxicillin and clavulanate potassium and institute appropriate therapy. (5.3)
Hepatic dysfunction and cholestatic jaundice: Discontinue if signs/symptoms of hepatitis occur. Monitor liver function tests in patients with hepatic impairment. (5.4)

Clostridioides difficile-associated diarrhea (CDAD): Evaluate patients if diarrhea occurs. (5.5)
Patients with mononucleosis who receive amoxicillin and clavulanate potassium develop skin rash. Avoid amoxicillin and clavulanate potassium use in these patients. (5.6) • Overgrowth: The possibility of superinfections with fungal or bacterial pathogens should be

- ADVERSE REACTIONS --The most frequently reported adverse reactions were diarrhea/loose stools (9%), nausea (3%), skin rashes and urticaria (3%), vomiting (1%) and vaginitis (1%) (6.1) To report SUSPECTED ADVERSE REACTIONS, contact Devatis, Inc. at 1-800-617-3238 or FDA

at 1-800 -FDA-1088 or www.fda.gov/medwatch. ---- DRUG INTERACTIONS

Co-administration with probenecid is not recommended. (7.1)

Concomitant use of amoxicillin and clavulanate potassium, and oral anticoagulants may increase the prolongation of prothrombin time. (7.2) Co-administration with allopurinol increases the risk of rash. (7.3)

Amoxicillin and clavulanate potassium may reduce efficacy of oral contraceptives. (7.4)

---- USE IN SPECIFIC POPULATIONS --Pediatric Use: Modify dose in patients 12 weeks or younger. (8.4)
Renal Impairment: Dosage adjustment is recommended for severe renal impairment (GFR less

than 30mL/min). (2.4, 8.6) See 17 for PATIENT COUNSELING INFORMATION

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FULL PRESCRIBING INFORMATION

1 INDICATIONS AND USAGE Amoxicillin and clavulanate potassium for oral suspension is indicated for the treatment of infections in adults and pediatric patients, due to susceptible isolates of the designated bacteria

Lower Respiratory Tract Infections - caused by beta-lactamase-producing isolates of Haemophilus influenzae and Moraxella catarrhalis

Acute Bacterial Otitis Media - caused by beta-lactamase-producing isolates of *H. influenzae* and M. catarrhalis **Sinusitis** - caused by beta-lactamase-producing isolates of *H. influenzae* and

Skin and Skin Structure Infections - caused by beta-lactamase-producing isolates of Staphylococcus aureus, Escherichia coli, and Klebsiella species. • Urinary Tract Infections - caused by beta-lactamase-producing isolates of E. coli, Klebsiella

species, and Enterobacter species. When susceptibility test results show susceptibility to amoxicillin, indicating no beta-lactamase

To reduce the development of drug-resistant bacteria and maintain the effectiveness of Amoxicillin and clavulanate potassium and other antibacterial drugs, Amoxicillin and clavulanate notassium 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

production, amoxicillin and clavulanate potassium for oral suspension should not be used.

2 DOSAGE AND ADMINISTRATION

2.1 Important Administration Instruction

Amoxicillin and clavulanate potassium for oral suspension may be taken without regard to meals however, absorption of clavulanate potassium is enhanced when amoxicillin and clavulanate potassium for oral suspension is administered at the start of a meal. To minimize the potential for estinal intolerance, amoxicillin and clavulanate potassium for oral suspension should be taken at the start of a meal.

2.2 Adult Patient See dosing regimens of Amoxicillin and clavulanate potassium (based on the amoxicillir omponent) provided in Table 1 below

Table 1. Dosing Regimens of Amoxicillin and clavulanate potassium in Adult Patients

DOSING REGIMEN OF AMOXICILLIN AND CLAVULANATE POTASSIUM one 875 mg tablet^a of Amoxicillin and clavulanate potassium every 12 hours respiratory trac one 500 mg tabletb,c of Amoxicillin and clavulanate one 500 mg tabletb,c of Amoxicillin and clavulanate Less severe potassium every 12 hours one 250 mg tablet^d of Amoxicillin and clavulanate

Adults who have difficulty swallowing may be given the Amoxicillin and clavulanate potass 200 mg/28.5 mg per 5 mL suspension or the Amoxicillin and clavulanate potassium 400 mg/57 ng per 5 mL suspension may be used in place of the 875 mg/125 mg tablet. Adults who have difficulty swallowing may be given the Amoxicillin and clavulanate potassium 25 mg/31.25 mg per 5 mĹ or Amoxicillin and clavulanate potassium 250 mg/62.5 mg per 5 mL uspension in place of the 500 mg/125 mg tablet. wo Amoxicillin and clavulanate potassium 250 mg/125 mg tablets are NOT substitutable with one 500 mg/125 mg Amoxicillin and clavulanate potassium tablet [see Dosage and Administration

moxicillin and clavulanate potassium 250 mg/125 mg tablet is NOT substitutable with Amoxicillin and clavulanate potassium 250 mg/62.5 mg chewable tablet [see Dosage and

2.3 Pediatric Patients Based on the amoxicillin component, Amoxicillin and clavulanate potassium should be dosed as

Neonates and Infants Aged less than 12 weeks (less than 3 months): See dosing regimens of Table 2: Dosing Regimens of Amoxicillin and clavulanate potassium in Neonates and

ATIENT POPULATION	DOSING REGIMEN
	Amoxicillin and clavulanate potassium 125 mg/31.25 mg per 5 mL for oral suspension ^a
leonates and Infants ged less than 12 weeks ess than 3 months)	30 mg/kg/day every 12 hours

Infants Aged Less than 12 Weeks (Less than 3 Months)

experience with the Amoxicillin and clavulanate potassium 200 mg/28.5 mg per 5 mL formulation in this age group is limited, and thus, use of the Amoxicillin and clavulanate potassium 125 mg/31.25 mg per 5 mL for oral suspension is recommended. Patients Aged 12 weeks (3 months) and Older and Weighing Less than 40 kg: See dosing

• The every 12 hour regimen is recommended as it is associated with significantly less diarrhea

Table 3: Dosing in Patients Aged 12 Weeks (3 Months) and Older and Weighing Less than

INFECTION DOSING REGIMEN Every 12 hours Every 8 hours potassium 200 mg/28.5 mg per 5 mL potassium 125 mg/31.25 mg per 5 mL Amoxicillin and clavulanate potassium 250 mg/62.5 mg potassium 400 mg/57 mg er 5 mL for oral suspension er 5 mL for oral suspensio 45 mg/kg/day every 12 hours 40 mg/kg/day every 8 hours more severe infections Less severe 25 mg/kg/day every 20 mg/kg/day every

Each strength of Amoxicillin and clavulanate potassium for oral suspension is available as a chewable tablet for use by older children.

Duration of therapy studied and recommended for acute otitis media is 10 days. Patients Weighing 40 kg or More: Pediatric patients weighing 40 kg or more should be dosed

• The 250 mg/125 mg tablet of Amoxicillin and clavulanate potassium should NOT be used until the child weighs at least 40 kg, due to the different amoxicillin to clavulanic acid ratios in the 250 mg/125 mg tablet of amoxicillin and clavulanate potassium versus the 250 mg/62.5 mg hewable tablet of amoxicillin and clavulanate potassium.

2.4 Patients with Renal Impairment atients with impaired renal function do not generally require a reduction in dose unless the mpairment is severe. Renal impairment patients with a glomerular filtration rate (GFR) of less than 30 mL/min should NOT receive the 875 mg dose (based on the amoxicillin component) of

moxicillin and clavulanate potassium. See dosing regimens in patients with severe renal impairment provided in Table 4. Table 4. Dosing Regimens of Amoxicillin and clavulanate potassium in Patients with Sever

Patients with Renal Impairment	Dosing Regimen
GFR 10 mL/min to 30 mL/min	500 mg or 250 mg every 12 hours, depending on the severity of the infection
GFR less than 10 mL/min	500 mg or 250 mg every 24 hours, depending on severity of the infection
Hemodialysis	500 mg or 250 mg every 24 hours, depending on severity of the infection Administer an additional dose both during and at the end of dialysis

2.5 Directions for Mixing Amoxicillin and Clavulanate Potassium for Oral Suspension Prepare amoxicillin and clavulanate potassium for oral suspension at time of dispensing as follows: Tap bottle until all powder flows freely. Measure a total (see Table 5 below for total amount of water for reconstitution) OF WATER. Add approximately 2/3 of the water to the powder. Replace cap and shake VIGOROUSLY. Add remaining water. Replace cap and shake Table 5: Amount of Water for Mixing Amoxicillin and Clavulanate Potassium for Oral

Contents of Each Teaspoonful (5 mL) Bottle Size Water for Reconstitution 45 mL 400 mg of amoxicilli 100 mL 90 mL Shake oral suspension well before using. Reconstituted suspension must be stored under

refrigeration and discarded after 10 days. Some color change is normal during dosing period 2.6 Switching between Dosage Forms and between Strengths

Amoxicillin and Clavulanate Potassium 250 mg/125 mg Tablet is NOT Substitutable with Amoxicillin and Clavulanate Potassium 250 mg/62.5 mg Chewable Tablet The 250 mg/125 mg tablet of Amoxicillin and clavulanate potassium and the 250 mg/62.5 mg chewable tablet of Amoxicillin and clavulanate potassium should NOT be substituted for each of and the 250 mg/125 mg tablet of Amoxicillin and clavulanate potassium should NOT be used in pediatric patients weighing less than 40 kg [see Dosage and Administration (2.3)]. The 250 mg table of Amoxicillin and clavulanate potassium and the 250 mg chewable tablet of Amoxicillin and clavulanate potassium do not contain the same amount of clavulanic acid. The 250 mg tablet of Amoxicillin and clavulanate potassium contain the same amount of clavulanic acid. The 250 mg tablet of tablet of the 250 mg tablet of table Amoxicillin and clavulanate potassium contains 125 mg of clavulanic acid whereas the 250 mg :hewable tablet of Amoxicillin and clavulanate potassium contains 62.5 mg of clavulanic acid. Two Amoxicillin and Clavulanate Potassium 250 mg/125 mg Tablets are NOT Substitutable with One 500 mg/125 mg Amoxicillin and Clavulanate Potassium Tablet

Two 250 mg/125 mg tablets of Amoxicillin and clavulanate potassium should NOT be substituted Two 250 mg/12s ing tables of Amoxicillia and clavulariate potassium; should write substitute for one 500 mg/12s mg tablet of Amoxicillin and clavulariate potassium. Since both the 250 mg and 500 mg tablets of Amoxicillin and clavulariate potassium contain the same amount of clavularia caid (125 mg, as the potassium salt), two 250 mg tablets of Amoxicillin and clavulariat potassium are not equivalent to one 500 mg tablet of Amoxicillin and clavulariate potassium. DOSAGE FORMS AND STRENGTHS

Amoxicillin and clavulanate potassium for oral suspension, USP:

• 400 mg/57 mg per 5 mL: Orange-flavored powder for oral suspension (each 5 mL of reconstituted suspension contains 400 mg of amoxicillin as the trihydrate and 57 mg of

CONTRAINDICATIONS

1.1 Serious Hypersensitivity Reactions Amoxicillin and clavulanate potassium is contraindicated in patients with a history of serious hypersensitivity reactions (e.g., anaphylaxis or Stevens-Johnson syndrome) to amoxicillin, clavulanate or to other beta-lactam antibacterial drugs (e.g., penicillins and cephalosporins) 4.2 Cholestatic Jaundice/Hepatic Dysfunction

cholestatic jaundice/hepatic dysfunction associated with amoxicillin and clavulanate potassiur WARNINGS AND PRECAUTIONS

5.1 Hypersensitivity Reactions

75 mm

5.2 Severe Cutaneous Adverse Reactions

Serious and occasionally fatal hyperser patients receiving beta-lactam antibacterials, including amoxicillin and clavulanate potassiu These reactions are more likely to occur in individuals with a history of penicillin hypersensitivity and/or a history of sensitivity to multiple allergens. Before initiating therapy with amoxicillin and clavulanate potassium, careful inquiry should be made regarding previous hypersensitivity eactions to penicillins, cephalosporins, or other allergens. If an allergic reaction occurs, amoxicillin and clavulanate potassium should be discontinued, and appropriate therapy instituted

Amoxicillin and clavulanate potassium may cause severe cutaneous adverse reactions (SCAR), such as Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), drug reaction with eosinophilia and systemic symptoms (DRESS), and acute generalized exanthematous pustulosi (AGEP). If patients develop a skin rash, they should be monitored closely, and Amoxicillin and

avulanate potassium discontinued if lesions progress.

5.3 Drug-Induced Enterocolitis Syndrome (DIES) Orug-induced enterocolitis syndrome (DIES) has been reported with use of amoxicillin, a component of Amoxicillin and clavulanate potassium [see Adverse Reactions (6.2)], with most cas occurring in pediatric patients ≤ 18 years of age. DIES is a non-lgE mediated hypersensitivity reaction characterized by protracted vomiting occurring 1 to 4 hours after drug ingestion in the absence of skin or respiratory symptoms. DIES may be associated with pallor, lethargy, hypotension, shock, diarrhea within 24 hours of ingesting amoxicillin, and leukocytosis with neutrophilia. If DIES occurs, discontinue Amoxicillin and clavulanate potassium and institute

Hepatic dysfunction, including hepatitis and cholestatic jaundice has been associated with the use of amoxicillin and clavulanate potassium. Hepatic toxicity is usually reversible: however. deaths have been reported. Hepatic function should be monitored at regular intervals in patien

5.5 Clostridioides difficile Associated Diarrhea (CDAD) stridioides difficile associated diarrhea (CDAD) has been reported with use of nearly all the colon leading to overgrowth of *C. difficile*.

C difficile produces toxins A and B which contribute to the development of CDAD. Hypertoxin

producing strains of *C. difficile* cause increased morbidity and mortality, as these infections can be refractory to antimicrobial therapy and may require colectomy. CDAD must be considered in all patients who present with diarrhea following antibacterial use. Careful medical history is necessary since CDAD has been reported to occur over 2 months after the administration of

If CDAD is suspected or confirmed, ongoing antibacterial use not directed against *C. difficile* may need to be discontinued. Appropriate fluid and electrolyte management, protein supplementation, antibacterial treatment of C. difficile, and surgical evaluation should be nstituted as clinically indicated. 5.6 Skin Rash in Patients with Mononucleosis

A high percentage of patients with mononucleosis who receive amoxicillin develop an

erythematous skin rash. Thus, amoxicillin and clavulanate potassium should not be administered 5.7 Potential for Microbial Overgrowth

he possibility of superinfections with fungal or bacterial pathogens should be considered during therapy. If superinfection occurs, amoxicillin and clavulanate potassium should be discontinued and appropriate therapy instituted.

Prescribing amoxicillin and clavulanate potassium 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. 6 ADVERSE REACTIONS

The following are discussed in more detail in other sections of the labeling:

5.9 Development of Drug-Resistant Bacteria

Anaphylactic reactions [see Warnings and Precautions (5.1)]
Severe Cutaneous Adverse Reactions [see Warnings and Precautions (5.2)] Drug-Induced Enterocolitis Syndrome (DIES) [see Warnings and Precautions (5.3)] lepatic Dysfunction [see Warnings and Precautions (5.4)] Clostridioides difficile Associated Diarrhea (CDAD) [see Warnings and Precautions (5.5)]

mother drug and may not reflect the rates observed in practice.

Because clinical trials are conducted under widely varying conditions, adverse reaction rate observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of

The most frequently reported adverse reactions were diarrhea/loose stools (9%), nausea (3%), discontinued therapy because of drug-related adverse reactions. The overall incidence of adverse reactions, and in particular diarrhea, increased with the higher recommended dose.

Other less frequently reported adverse reactions (less than 1%) include: Abdominal discomfort, attributes and hoodships. skin rashes and urticaria (3%), vomiting (1%) and vaginitis (1%). Less than 3% of patients

In pediatric patients (aged 2 months to 12 years), 1 US/Canadian clinical trial was conducted which compared 45/6.4 mg/kg/day (divided every 12 hours) of amoxicillin and clavulanate sium for 10 days versus 40/10 mg/kg/day (divided every 8 hours) of amoxicillin and clavulanate potassium for 10 days in the treatment of acute otitis media. A total of 575 patients were enrolled, and only the suspension formulations were used in this trial. Overall, the adverse reactions seen were comparable to that noted above; however, there were differences in the rates of diarrhea, skin rashes/urticaria, and diaper area rashes [See Clinical Studies (14.2)].

Front

In addition to adverse reactions reported from clinical trials, the following have been identified during postmarketing use of amoxicillin and clavulanate potassium. Because they are reported voluntarily from a population of unknown size, estimates of frequency cannot be made. These events have been chosen for inclusion due to a combination of their seriousness, frequency of

reporting, or potential causal connection to amoxicillin and clavulanate potassium. Gastrointestinal: Drug-induced enterocolitis syndrome (DIES), indigestion, gastritis, stomatitis glossitis, black "hairy" tongue, mucocutaneous candidiasis, enterocolitis, and rhagic/pseudomembranous colitis. Onset of pseudomembranous colitis symptoms may

occur during or after antibacterial treatment (see Warnings and Precautions (5.5)). Immune: Hypersensitivity reactions, anaphylactic/anaphylactoid reactions (including shock), angioedema, serum sickness-like reactions (urticaria or skin rash accompanied by arthritis. arthralgia, myalgia, and frequently fever), hypersensitivity vasculitis [see Warnings and Precautions

Skin and Appendages: Rashes, pruritus, urticaria, erythema multiforme, SJS, TEN, DRESS, AGEP, exfoliative dermatitis, and linear IgA bullous dermatosis.

Liver: Hepatic dysfunction, including hepatitis and cholestatic jaundice, increases in serum transaminases (AST and/or ALT), serum bilirubin, and/or alkaline phosphatase, has been reported with amoxicillin and clavulanate potassium. It has been reported more commonly in the elderly, in males, or in patients on prolonged treatment. The histologic findings on liver biopsy have consisted of predominantly cholestatic, hepatocellular, or mixed cholestatic hepatocellular ges. The onset of signs/symptoms of hepatic dysfunction may occur during or several weeks after therapy has been discontinued. The hepatic dysfunction, which may be severe, is usually versible. Deaths have been reported [see Contraindications (4.2), Warnings and Precautions (5.4)].

Renal: Interstitial nephritis, hematuria, and crystalluria have been reported [see Overdosage (10)]. Hemic and Lymphatic Systems: Anemia, including hemolytic anemia, thrombocytopenia, penic purpura, eosinophilia, leukopenia, and agranulocytosis have been reported. These reactions are usually reversible on discontinuation of therapy and are believed to be hypersensitivity phenomena. Thrombocytosis was noted in less than 1% of the patients treated with amoxicillin and clavulanate potassium. There have been reports of increased prothrombin time in patients receiving amoxicillin and clavulanate potassium and anticoagulant therapy concomitantly [see Drug Interactions (7.2)].

Central Nervous System: Agitation, anxiety, behavioral changes, aseptic meningitis, confusion convulsions, dizziness, insomnia, and reversible hyperactivity have been reported.

Miscellaneous: Tooth discoloration (brown, yellow, or gray staining) has been reported. Most reports occurred in pediatric patients. Discoloration was reduced or eliminated with brushing or

Probenecid decreases the renal tubular secretion of amoxicillin but does not delay renal excretion increased and prolonged blood concentrations of amoxicillin. Co-administration of probenecid is

Advise patients about the signs and symptoms of serious skin manifestations. Instruct patients to

Counsel patients that diarrhea is a common problem caused by antibacterials, and it usually ends

patients can develop watery and bloody stools (with or without stomach cramps and fever) even

when the antibacterial is discontinued. Sometimes after starting treatment with antibacterials,

as late as 2 or more months after having taken their last dose of the antibacterial. If diarrhea is

Patients should be counseled that antibacterial drugs, including Amoxicillin and clavulanate

potassium, should only be used to treat bacterial infections. They do not treat viral infections

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

ikelihood that bacteria will develop resistance and will not be treatable by Amoxicillin and

clavulanate potassium or other antibacterial drugs in the future.

severe or lasts more than 2 or 3 days, patients should contact their physician as soon as possible.

stop taking Amoxicillin and clavulanate potassium immediately and promptly report the first

signs or symptoms of skin rash, mucosal lesions, or any other sign of hypersensitivity [see



7.2 Oral Anticoagular

maintain the desired level of anticoagulation.

been reported in patients receiving amoxicillin and oral anticoagulants. Appropriate monitoring should be undertaken when anticoagulants are prescribed concurrently with amoxicillin and lanate potassium. Adjustments in the dose of oral anticoagulants may be necessary to

patients receiving both drugs as compared to patients receiving amoxicillin alone. It is not known whether this potentiation of amoxicillin rashes is due to allopurinol or the hyperuricemia present

7.3 Allopurinol

in these patients. Amoxicillin and clavulanate potassium may affect intestinal flora, leading to lower estrogen reabsorption and reduced efficacy of combined oral estrogen/progesterone contraceptives

The concurrent administration of allopurinol and amoxicillin increases the incidence of rashes in

High urine concentrations of amoxicillin may result in false-positive reactions when testing for sence of glucose in urine using CLINITEST®, Benedict's Solution, or Fehling's Solution. Since this effect may also occur with amoxicillin and clavulanate potassium, it is recommended that glucose tests based on enzymatic glucose oxidase reactions be used.

Following administration of amoxicillin to pregnant women, a transient decrease in plasma concentration of total conjugated estriol, estriol-glucuronide, conjugated estrone, and estradiol

has been noted. 8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Teratogenic Effects: Pregnancy Category B. Reproduction studies performed in pregnant rats and mice given amoxicillin and clavulanate potassium (2:1 ratio formulation of amoxicillin:clavulanate) at oral doses up to 1200 mg/kg/day revealed no evidence of harm to the clavulanate potassium crystalluria. fetus due to amoxicillin and clavulanate potassium. The amoxicillin doses in rats and mice (based on body surface area) were approximately 4 and 2 times the maximum recommended adult human oral dose (875 mg every 12 hours). For clavulanate, these dose multiples were approximately 9 and 4 times the maximum recommended adult human oral dose (125 mg every 8 hours). There are, however, no adequate and well-controlled studies in pregnant women

should be used during pregnancy only if clearly needed. 8.2 Labor and Delivery

Oral ampicillin-class antibiotics are poorly absorbed during labor. It is not known whether use of amoxicillin and clavulanate potassium in humans during labor or delivery has immediate or delayed adverse effects on the fetus, prolongs the duration of labor, or increases the likelihood of the necessity for an obstetrical intervention.

amoxicillin has been shown to be excreted in human milk. Amoxicillin and clavulanate potassium

Because animal reproduction studies are not always predictive of human response, this drug

use by nursing mothers may lead to sensitization of infants. Caution should be exercised when amoxicillin and clavulanate potassium is administered to a nursing womar

8.3 Nursing Mothers

The safety and effectiveness of amoxicillin and clavulanate potassium for oral suspension and chewable tablets have been established in pediatric patients. Use of amoxicillin and clavulanate potassium in pediatric patients is supported by evidence from studies of amoxicillin and clavulanate potassium tablets in adults with additional data from a study of amoxicillin and anate potassium for oral suspension in pediatric patients aged 2 months to 12 years with acute otitis media [see Clinical Studies (14.2)].

Because of incompletely developed renal function in neonates and young infants, the elimination of amoxicillin may be delayed; clavulanate elimination is unaltered in this age group. Dosing of Chemically, clavulanate potassium is potassium (Z)(ZR, SR)-3- (2-hydroxyethylidene)-Abnormal prolongation of prothrombin time (increased international normalized ratio [INR]) has of amoxicillin may be delayed; clavulanate elimination is unaltered in this age group. Dosing of

more likely to have decreased renal function, care should be taken in dose selection, and it may

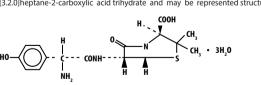
8.6 Renal Impairment

10 OVERDOSAGE

Interstitial nephritis resulting in oliquric renal failure has been reported in patients after

by blocking the active sites of these enzymes.

Amoxicillin is an analog of ampicillin, derived from the basic penicillin nucleus 6-aminopenicillanic acid. The amoxicillin molecular formula is $C_{18}H_{19}N_3O_3S-3H_2O$, and the molecular weight is 419.46. Chemically, amoxicillin is (2S,5R,6R)-6-[(R)-(-)-2-Amino-2-(p-hydroxyphenyl)acetamido]-3,3-dimethyl-7-oxo-4-thia-1-



esponses between the elderly and younger patients, but greater sensitivity of some older

In case of overdosage, discontinue medication, treat symptomatically, and institute supportive measures as required. A prospective study of 51 pediatric patients at a poison-control center

renal clearance of amoxicillin and clavulanate potassium. Amoxicillin and clavulanate potassiun

may be removed from circulation by hemodialysis [see Dosage and Administration (2.4)]. 11 DESCRIPTION Amoxicillin and clavulanate potassium for oral suspension, USP is an oral antibacterial

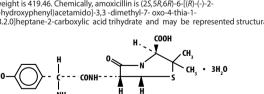
32% were greater than or equal to 65 years old, and 14% were greater than or equal to 75 years old. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in s drug is known to be substantially excreted by the kidney, and the risk of adverse reactions to

clavulanate potassium overdosage in adult and pediatric patients. In case of overdosage, adequate fluid intake and diuresis should be maintained to reduce the risk of amoxicillin and

mbination consisting of amoxicillin and the beta-lactamase inhibitor, clavulanate potassium azabicyclo[3.2.0]heptane-2-carboxylic acid trihydrate and may be represented structurally as

this drug may be greater in patients with impaired renal function. Because elderly patients are

xicillin is primarily eliminated by the kidney and dosage adjustment is usually required in

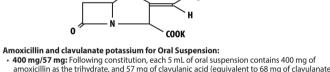


amoxicillin and clavulanate potassium should be modified in pediatric patients aged less than 12 7-oxo-4-oxa-1-azabicyclo[3.2.0]-heptane-2-carboxylate and may be represented structurally as Of the 3,119 patients in an analysis of clinical studies of amoxicillin and clavulanate potassium

patients with severe renal impairment (GFR less than 30 mL/min). See Patients with Renal Impairment [see Dosage and Administration (2.4)] for specific recommendations in patients with renal impairment

Crystalluria, in some cases leading to renal failure, has also been reported after amoxicillin and

significant clinical symptoms¹.



Inactive Ingredients: lose Sodium, Sucralose, Sodium Citrate, Anhydrous Citric Acid, Silicon Dioxide, Colloidal Silicon Dioxide, Xanthan Gum, Vanilla Flavor, Tutti Frutti Flavor.

· Each 5 mL of reconstituted 400 mg/57 mg oral suspension of amoxicillin and clavulanate

12 CLINICAL PHARMACOLOGY 12.1 Mechanism of Action Amoxicillin and clavulanate potassium is an antibacterial drug [see Microbiology (12.4)]. following administration of amoxicillin and clavulanate potassium tablets are shown in Table 6

nd following administration of amoxicillin and clavulanate potassium for oral suspension and le tablets are shown in Table 7 Table 6: Mean (±S.D.) Amoxicillin and Clavulanate Potassium Pharmacokineti Parameters^{a,b} with Amoxicillin and Clavulanate Potassium Tablets

Pose and Regimen of Amoxicillin and Clavulanate Potassium	C _{max} (m	cg/mL)	AUC ₀₋₂₄ (mcg*h/mL)
Amoxicillin and Clavulanate potassium	Amoxicillin	Clavulanate potassium	Amoxicillin	Clavulanate potassium
250 mg/125 mg every 8 hours	3.3 ± 1.12	1.5 ± 0.70	26.7 ± 4.56	12.6 ± 3.25
500 mg/125 mg every 12 hours	6.5 ± 1.41	1.8 ± 0.61	33.4 ± 6.76	8.6 ± 1.95
500 mg/125 mg every 8 hours	7.2 ± 2.26	2.4 ± 0.83	53.4 ± 8.87	15.7 ± 3.86
375 mg/125 mg everv 12 hours	11.6 ± 2.78	2.2 ± 0.99	53.5 ± 12.31	10.2 ± 3.04

Mean (± standard deviation) values of 14 normal adults (N equals 15 for clavulanate potassium in the low-dose regimens). Peak concentrations occurred approximately 1.5 hours after the Amoxicillin and clavulanate potassium administered at the start of a light meal

Table 7: Mean (±S.D.) Amoxicillin and Clavulanate Potassium Pharmacokinetic Para with Amoxicillin and Clavulanate Potassium for Oral Suspension and Chewable Tablets

Dose of Amoxicillin and Clavulanate Potassium	C _{max} (m	icg/mL)	AUC ₀₋₂₄ (mcg*h/mL)
Amoxicillin and Clavulanate potassium	Amoxicillin	Clavulanate potassium	Amoxicillin	Clavulanate potassium
400 mg/57 mg (5 mL of suspension)	6.94 ± 1.24	1.10 ± 0.42	17.29 ± 2.28	2.34 ± 0.94
400 mg/57 mg (1 chewable tablet)	6.67 ± 1.37	1.03 ± 0.33	17.24 ± 2.64	2.17 ± 0.73

approximately 1 hour after the dose. Amoxicillin and clavulanate potassium administered at the start of a light meal. Oral administration of 5 mL of the 250 mg/62.5 mg suspension of amoxicillin and clavulanate potassium or the equivalent dose of 10 mL of the 125 mg/31.25 mg suspension of amoxicillin and avulanate potassium provides average peak serum concentrations approximately 1 hour after osing of 6.9 mcg/mL for amoxicillin and 1.6 mcg/mL for clavulanic acid. The areas under the rum concentration curves obtained during the first 4 hours after dosing were 12.6 mcg*h/mL for amoxicillin and 2.9 mcg*h/mL for clavulanic acid when 5 mL of the 250 mg/62.5 mg nsion of amoxicillin and clavulanate potassium or equivalent dose of 10 mL of the 125 mg/ 25 mg suspension of amoxicillin and clavulanate potassium were administered to normal adults. One 250 mg/62.5 mg chewable tablet of amoxicillin and clavulanate potassium or two

25 mg/31.25 mg chewable tablets of amoxicillin and clavulanate potassium are equivalent to im L of the 250 mg/62.5 mg suspension of amoxicillin and clavulanate potassium are equivalent to

Mean (± standard deviation) values of 28 normal adults. Peak concentrations occurred

similar serum concentrations of amoxicillin and clavulanic acid. Amoxicillin serum concentrations achieved with amoxicillin and clavulanate potassium are similar to those produced by the oral administration of equivalent doses of amoxicillin alone. Time above Staphylococcus epid he minimum inhibitory concentration of 1 mcg/mL for amoxicillin has been shown to be similar clavulanate potassium in adults and childrer Absorption: Dosing in the fasted or fed state has minimal effect on the pharmacokinetics of

amoxicillin. While amoxicillin and clavulanate potassium can be given without regard to meals, absorption of clavulanate potassium when taken with food is greater relative to the fasted state.

In one study, the relative bioavailability of clavulanate was reduced when amoxicillin and avulanate potassium was dosed at 30 and 150 minutes after the start of a high-fat breakfast. <u>Distribution:</u> Neither component in amoxicillin and clavulanate potassium is highly protein-bound; clavulanic acid is approximately 25% bound to human serum and amoxicillin pproximately 18% bound.

Two hours after oral administration of a single 35 mg/kg dose of suspension of amoxicillin and lavulanate potassium to fasting children, average concentrations of 3 mcg/mL of amoxicillin and https://www.fda.gov/STIC. 5 mcg/mL of clavulanic acid were detected in middle ear effusions. <u>Metabolism and Excretion:</u> The half-life of amoxicillin after the oral administration of amoxicillin nd clavulanate potassium is 1.3 hours and that of clavulanic acid is 1 hour. Approximately 50% to 70% of the amoxicillin and approximately 25% to 40% of the clavulanic acid are excreted unchanged in urine during the first 6 hours after administration of a single 250 mg/125 mg or 500 mg/125 mg tablet of amoxicillin and clavulanate potassium.

The formulation of amoxicillin and clavulanic acid in amoxicillin and clavulanate potassium antibacterial spectrum of amoxicillin to include many bacteria normally resistant to amoxicillin

Gram-positive bacteria

Haemophilus influenzae Moraxella catarrhalis The following in vitro data are available, but their clinical significance is unknown. At least 90 than or equal to the susceptible breakpoint for amoxicillin and clavulanic acid. However, the

Staphylococcus saprophyticus

Gram-negative Bacteria

Anaerobic Bacteria eroides species including Bacteroides fragilis Fusobacterium species

13.1 Carcinogenesis, Mutagenesis, Impairment Of Fertility non-mutagenic in the Ames bacterial mutation assay, and the yeast gene conversion assay. Amoxicillin and clavulanate potassium was weakly positive in the mouse lymphoma assay, but the trend toward increased mutation frequencies in this assay occurred at doses that were also

Gram-negative bacteria

percent of the following bacteria exhibit an in vitro minimum inhibitory concentration (MIC) less efficacy of amoxicillin and clavulanic acid in treating clinical infections due to these bacteria **has**

Susceptibility Test Methods

Long-term studies in animals have not been performed to evaluate carcinogenic potential Amoxicillin and clavulanate potassium (4:1 ratio formulation of amoxicillin:clavulanate) was the maximum recommended adult human oral dose (875 mg every 12 hours). For clavulanate, human oral dose (125 mg every 8 hours), also based on body surface area.

14.1 Lower Respiratory Tract and Complicated Urinary Tract Infections
Data from 2 pivotal trials in 1,191 patients treated for either lower respiratory tract infections or complicated urinary tract infections compared a regimen of 875 mg/125 mg tablets of amoxicillin and clavulanate potassium every 12 hours to 500 mg/125 mg tablets of amoxicillin and clavulanate potassium dosed every 8 hours (584 and 607 patients, respectively). Comparable

2% for the 500 mg every 8 hours regimer ry tract infection (i.e., patients with abnormalities of the urinary tract that predispose to elapse of bacteriuria following eradication, n equals 268) were randomized (1:1) to receive either 375 mg/125 mg tablets of amoxicillin and clavulanate potassium every 12 hours (n eguals 308) o 500 mg/125 mg tablets of amoxicillin and clavulanate potassium every 8 hours (n equals 321).

Time Post Therapy	875 mg every 12 hours % (n)	500 mg every 8 hours % (n)
2 to 4 days	81% (58)	80% (54)
5 to 9 days	58% (41)	52% (52)
2 to 4 weeks	52% (101)	55% (104)

14.2 Acute Bacterial Otitis Media and Diarrhea in Pediatric Patients One US/Canadian clinical trial was conducted which compared 45/6.4 mg/kg/day (divided 12 hours) of amoxicillin and clavulanate potassium for 10 days versus 40/10 mg/kg/day (divided every 8 hours) of amoxicillin and clavulanate potassium for 10 days in the treatment of acute otitis media. Only the suspension formulations were used in this trial. A total of 575 pediatric patients (aged 2 months to 12 years) were enrolled, with an even distribution among the 2 ment groups and a comparable number of patients were evaluable (i.e., greater than or

equal to 84%) per treatment group.

Otitis media-specific criteria were required for eligibility and a strong correlation was found at the end of therapy and follow-up between these criteria and physician assessment of clinical esponse. The clinical efficacy rates at the end of therapy visit (defined as 2 to 4 days after the

Diarrhea was defined as either: (a) 3 or more watery or 4 or more loose/watery stools in 1 day; OR (b) 2 watery stools per day or 3 loose/watery stools per day for 2 consecutive days. The incidence of diarrhea was significantly lower in patients who received the every 12 hours regimen compared to patients who received the every 8 hours regimen (14% and 34%, respectively). In addition, the number of patients with either severe diarrhea or who were withdrawn with diarrhea was significantly lower in the every 12 hours treatment group (3% and 8% for the every 12 hours/10 day and every 8 hours/10 day, respectively). In the every 12 hours treatment group, 3 ients (1%) were withdrawn with an allergic reaction, while 1 patient in the every 8 hours group

area was 4% and 6% for the every 12 hours and every 8 hours groups, respectively. It is not known if the finding of a statistically significant reduction in diarrhea with the oral suspensions dosed every 12 hours, versus suspensions dosed every 8 hours of amoxicillin and

1. Swanson-Biearman B, Dean BS, Lopez G, Krenzelok EP. The effects of penicillin and ephalosporin ingestions in children less than six years of age. Vet Hum Toxicol. 1988; 30: 66-67 regimens. Amoxicillin and clavulanate potassium produced comparable bacteriological success 16 HOW SUPPLIED/STORAGE AND HANDLING

> trihydrate and 57 mg of clavulanic acid as the potassium salt (equivalent to 68 mg of clavulanate potassium)). 50 mL (NDC 73043 009 01), 75 mL (NDC 73043 009 02), and

Store dry powder at 20° to 25°C (68° to 77°F). [See USP Controlled Room Temperature.] Store reconstituted suspension under refrigeration. Discard unused suspension after 10 days Keep out of the reach of children.

Counsel patients that Amoxicillin and clavulanate potassium contains a penicillin class drug



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Amoxicillin is a semisynthetic antibacterial with in vitro bactericidal activity against Gram-positiv and Gram-negative bacteria. Amoxicillin is, however, susceptible to degradation by beta-lactamases, and therefore, the spectrum of activity does not include organisms which produce these enzymes. Clavulanic acid is a beta-lactam, structurally related to the penicillins, hich possesses the ability to inactivate some beta-lactamase enzym microorganisms resistant to penicillins and cephalosporins. In particular, it has good activity against the clinically important plasmid-mediated beta-lactamases frequently responsible for

following bacteria, both in vitro and in clinical infections [see Indications and Usage (1)].

not been established in adequate and well-controlled clinical trials.

Viridans group Streptococcus

Amoxicillin diffuses readily into most body tissues and fluids with the exception of the brain and

ation regarding susceptibility test interpretive criteria and associated test methods and quality control standards recognized by FDA for this drug, please see:

associated with decreased cell survival.

Amoxicillin and clavulanate potassium was negative in the mouse micronucleus test, and in the dominant lethal assay in mice. Potassium clavulanate alone was tested in the Ames bacterial nutation assay and in the mouse micronucleus test and was negative in each of these assays Amoxicillin and clavulanate potassium (2:1 ratio formulation of amoxicillin:clavulanate) at oral doses of up to 1,200 mg/kg/day was found to have no effect on fertility and reproductive performance in rats. Based on body surface area, this dose of amoxicillin is approximately 4 times

re was no significant difference in the percentage of adverse events in each group. The most frequently reported adverse event was diarrhea; incidence rates were similar for the 875 mg every 12 hours and 500 mg every 8 hours dosing regimens (15% and 14%, respectively); how there was a statistically significant difference (p less than 0.05) in rates of severe diarrhea or withdrawals with diarrhea between the regimens: 1% for 875 mg every 12 hours regimen versus In one of these pivotal trials, patients with either pyelonephritis (n.equals 361) or a complicated

The number of bacteriologically evaluable patients was comparable between the two dosing

rates in patients assessed 2 to 4 days immediately following end of therapy. The bacteriologic

efficacy was demonstrated between the every 12 hours and every 8 hours dosing regimen

efficacy rates were comparable at one of the follow-up visits (5 to 9 days post-therapy) and at a

Table 8: Bacteriologic Efficacy Rates For Amoxicillin And Clavulanate Potassium			
Time Post Therapy	875 mg every 12 hours % (n)	500 mg every 8 hours % (n)	
2 to 4 days	81% (58)	80% (54)	

completion of therapy) and at the follow-up visit (defined as 22 to 28 days post-completion of rapy) were comparable for the 2 treatment groups, with the following cure rates obtained for the evaluable patients: At end of therapy, 87% (n equals 265) and 82% (n equals 260) for 45 mg/kg/day every 12 hours and 40 mg/kg/day every 8 hours, respectively. At follow-up, 67% (n equals 249) and 69% (n equals 243) for 45 mg/kg/day every 12 hours and 40 mg/kg/day every 8

was withdrawn for this reason. The number of patients with a candidal infection of the diaper

clavulanate potassium, can be extrapolated to the chewable tablets of amoxicillin and clavulanate potassium. The presence of mannitol in the chewable tablets of amoxicillin and clavulanate potassium may contribute to a different diarrhea profile.

Amoxicillin and Clavulanate Potassium for Oral Suspension USP **400 mg/57 mg per 5 mL** is white to creamy white colored, vanilla-flavored, homogeneou powder mixture (each 5 mL of reconstituted suspension contains 400 mg of amoxicillin as the

Dispense in original container. As noted, before, though there was no significant difference in the percentage of adverse events in each group, there was a statistically significant difference in rates of severe diarrhea or withdrawals with diarrhea between t

Administration Instructions

17 PATIENT COUNSELING INFORMATION

100 mL (NDC 73043 009 03).

Inform patients that Amoxicillin and clavulanate potassium may be taken every 8 hours or every $12\ hours, depending\ on\ the\ dose\ prescribed.\ Each\ dose\ should\ be\ taken\ with\ a\ meal\ or\ snack\ to$ reduce the possibility of gastrointestinal upset.

product that can cause allergic reactions in some individuals.

FIBER DIRECTION

Storage Instructions Advise patients to keep suspension refrigerated. Shake well before using. When dosing a child with the suspension (liquid) of amoxicillin and clavulanate potassium, use a calibrated oral syringe. Be sure to rinse the calibrated oral syringe after each use. Bottles of suspension of amoxicillin and clavulanate potassium may contain more liquid than required. Follow your doctor's instructions about the amount to use and the days of treatment your child requires Discard any unused medicine.