HIGHLIGHTS OF PRESCRIBING INFORMATION
These highlights do not include all the information needed to use ZITHROMAX® safely and effectively. See full prescribing information for ZITHROMAX.

ZITHROMAX (azithromycin) tablets, for oral use
ZITHROMAX (azithromycin) for oral suspension
Initial U.S. Approval: 1991

---------- INDICATIONS AND USAGE----------

ZITHROMAX is a macrolide antibacterial drug indicated for treatment of patients with mild to moderate infections caused by susceptible strains of the designated microorganisms in the specific conditions listed below:

- Acute bacterial exacerbations of chronic bronchitis in adults (1.1)
- Acute bacterial sinusitis in adults (1.1)
- Uncomplicated skin and skin structure infections in adults (1.1)
- Urethritis and cervicitis in adults (1.1)
- Genital ulcer disease in men (1.1)
- Acute otitis media in pediatric patients (6 months of age and older) (1.2)
- Community-acquired pneumonia in adults and pediatric patients (6 months of age and older) (1.1, 1.2)
- Pharyngitis/tonsillitis in adults and pediatric patients (2 years of age and older) (1.1, 1.2)

Limitation of Use:
ZITHROMAX is not recommended in patients with pneumonia who are judged to be inappropriate for oral therapy because of moderate to severe illness or risk factors. (1.3)

To reduce the development of drug-resistant bacteria and maintain the effectiveness of ZITHROMAX and other antibacterial drugs, ZITHROMAX should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. (1.4)

----------DOSAGE AND ADMINISTRATION----------

Recommended Dosage for Adult Patients (2.1)

Infection	Recommended Dose/Duration of Therapy
Community-acquired pneumonia (mild severity) Pharyngitis/tonsillitis (second-line therapy) Skin/skin structure (uncomplicated)	500 mg as a single dose on Day 1, followed by 250 mg once daily on Days 2 through 5.
Acute bacterial exacerbations of chronic bronchitis (mild to moderate)	500 mg as a single dose on Day 1, followed by 250 mg once daily on Days 2 through 5 or 500 mg once daily for 3 days.
Acute bacterial sinusitis	500 mg once daily for 3 days.
Genital ulcer disease (chancroid) Non-gonococcal urethritis and cervicitis	One single 1 gram dose.
Gonococcal urethritis and cervicitis	One single 2 gram dose.

Recommended Dosage for Pediatric Patients (2.2)

Infection	Recommended Dose/Duration of Therapy
Acute otitis media (6 months of age and older)	30 mg/kg as a single dose or 10 mg/kg once daily for 3 days or 10 mg/kg as a single dose on Day 1 followed by 5 mg/kg/day on Days 2 through 5.
Acute bacterial sinusitis (6 months of age and older)	10 mg/kg once daily for 3 days.
Community-acquired pneumonia (6 months of age and older)	10 mg/kg as a single dose on Day 1 followed by 5 mg/kg once daily on Days 2 through 5.
Pharyngitis/tonsillitis (2 years of age and older)	12 mg/kg once daily for 5 days.

---------- DOSAGE FORMS AND STRENGTHS----------

- ZITHROMAX tablets 250 mg and 500 mg (3)
- ZITHROMAX for oral suspension 100 mg/5 mL and 200 mg/5 mL (3)

---------- CONTRAINDICATIONS ----------

- Patients with known hypersensitivity to azithromycin, erythromycin, any macrolide or ketolide drug. (4.1)
- Patients with a history of cholestatic jaundice/hepatic dysfunction associated with prior use of azithromycin. (4.2)

---------- WARNINGS AND PRECAUTIONS ----------

- Serious (including fatal) allergic and skin reactions: Discontinue ZITHROMAX if reaction occurs. (5.1)
- Hepatotoxicity: Severe, and sometimes fatal, hepatotoxicity has been reported. Discontinue ZITHROMAX immediately if signs and symptoms of hepatitis occur. (5.2)
- Infantile Hypertrophic Pyloric Stenosis (IHPS): Following the use of azithromycin in neonates (treatment up to 42 days of life), IHPS has been reported. Direct parents and caregivers to contact their physician if vomiting or irritability with feeding occurs. (5.3)
- Prolongation of QT interval and cases of torsades de pointes have been reported. This risk which can be fatal should be considered in patients with certain cardiovascular disorders including known QT prolongation or history torsades de pointes, those with proarrhythmic conditions, and with other drugs that prolong the QT interval. (5.4)
- Cardiovascular Death: Some observational studies have shown an approximately two-fold increased short-term potential risk of acute cardiovascular death in adults exposed to azithromycin relative to other antibacterial drugs, including amoxicillin. Consider balancing this potential risk with treatment benefits when prescribing ZITHROMAX. (5.5)
- *Clostridioides difficile*-Associated Diarrhea: Evaluate patients if diarrhea occurs. (5.6)
- ZITHROMAX may exacerbate muscle weakness in persons with myasthenia gravis. (5.7)

---------- ADVERSE REACTIONS ----------

Most common adverse reactions are diarrhea (5 to 14%), nausea (3 to 18%), abdominal pain (3 to 7%), or vomiting (2 to 7%). (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Pfizer Inc. at 1-800-438-1985 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

---------- DRUG INTERACTIONS----------

- Nelfinavir: Close monitoring for known adverse reactions of azithromycin, such as liver enzyme abnormalities and hearing impairment, is warranted. (7.1)
- Warfarin: Use with azithromycin may increase coagulation times; monitor prothrombin time. (7.2)

---------- USE IN SPECIFIC POPULATIONS ----------

Geriatric use: Elderly patients may be more susceptible to development of torsades de pointes arrhythmias. (8.5)

See 17 for PATIENT COUNSELING INFORMATION and FDA-approved patient labeling.

Revised: 7/2026

FULL PRESCRIBING INFORMATION: CONTENTS*

1 INDICATIONS AND USAGE
- 1.1 Indications in Adult Patients
- 1.2 Indications in Pediatric Patients
- 1.3 Limitations of Use
- 1.4 Usage

2 DOSAGE AND ADMINISTRATION
- 2.1 Recommended Dosage for Adult Patients
- 2.2 Recommended Dosage for Pediatric Patients
- 2.3 Pediatric Dosage Guidelines for Pharyngitis/Tonsillitis
- 2.4 Preparation Instructions for ZITHROMAX for Oral Suspension

3 DOSAGE FORMS AND STRENGTHS

4 CONTRAINDICATIONS
- 4.1 Hypersensitivity
- 4.2 Hepatic Dysfunction

5 WARNINGS AND PRECAUTIONS
- 5.1 Hypersensitivity
- 5.2 Hepatotoxicity
- 5.3 Infantile Hypertrophic Pyloric Stenosis
- 5.4 QT Prolongation
- 5.5 Cardiovascular Death
- 5.6 *Clostridioides difficile*-Associated Diarrhea
- 5.7 Exacerbation of Myasthenia Gravis
- 5.8 Risk of Antibacterial Resistance in Sexually Transmitted Infections
- 5.9 Development of Drug-Resistant Bacteria

6 ADVERSE REACTIONS
- 6.1 Clinical Trials Experience
- 6.2 Postmarketing Experience
- 6.3 Laboratory Abnormalities

7 DRUG INTERACTIONS
- 7.1 Nelfinavir
- 7.2 Warfarin
- 7.3 Potential Drug-Drug Interaction with Macrolides

8 USE IN SPECIFIC POPULATIONS
- 8.1 Pregnancy
- 8.2 Lactation
- 8.4 Pediatric Use
- 8.5 Geriatric Use

10 OVERDOSAGE

11 DESCRIPTION

12 CLINICAL PHARMACOLOGY
- 12.1 Mechanism of Action
- 12.2 Pharmacodynamics
- 12.3 Pharmacokinetics
- 12.4 Microbiology

13 NONCLINICAL TOXICOLOGY
- 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility
- 13.2 Animal Toxicology and/or Pharmacology

14 CLINICAL STUDIES
- 14.1 Acute Bacterial Exacerbations of Chronic Bronchitis in Adult Patients
- 14.2 Acute Bacterial Sinusitis in Adult Patients
- 14.3 Pharyngitis/Tonsillitis in Pediatric Patients
- 14.4 Acute Otitis Media in Pediatric Patients

16 HOW SUPPLIED/STORAGE AND HANDLING

17 PATIENT COUNSELING INFORMATION

*Sections or subsections omitted from the full prescribing information are not listed.

FULL PRESCRIBING INFORMATION

1 INDICATIONS AND USAGE

1.1 Indications in Adult Patients

ZITHROMAX is indicated in adult patients for the treatment of mild to moderate infections caused by susceptible strains of the designated microorganisms in the specific conditions listed below:

- Acute bacterial exacerbations of chronic bronchitis due to *Haemophilus influenzae, Moraxella catarrhalis,* or *Streptococcus pneumoniae*.
- Acute bacterial sinusitis due to *Haemophilus influenzae*, *Moraxella catarrhalis*. or *Streptococcus pneumoniae*.
- Community-acquired pneumonia due to *Chlamydophila pneumoniae*, *Haemophilus influenzae*, *Mycoplasma pneumoniae,* or *Streptococcus pneumoniae* in patients appropriate for oral therapy.
- Pharyngitis/tonsillitis caused by *Streptococcus pyogenes* as an alternative to first-line therapy in individuals who cannot use first-line therapy.
- Uncomplicated skin and skin structure infections due to *Staphylococcus aureus, Streptococcus pyogenes*, or *Streptococcus agalactiae*.
- Urethritis and cervicitis due to *Chlamydia trachomatis* or *Neisseria gonorrhoeae*.
- Genital ulcer disease in men due to *Haemophilus ducreyi* (chancroid). Due to the small number of women included in clinical trials, the efficacy of azithromycin in the treatment of chancroid in women has not been established.

1.2 Indications in Pediatric Patients

ZITHROMAX is indicated in pediatric patients for the treatment of mild to moderate infections caused by susceptible strains of the designated microorganisms in the specific conditions listed below: *[see Use in Specific Populations (8.4) and Clinical Studies (14.2)]*.

- Acute otitis media caused by *Haemophilus influenzae, Moraxella catarrhalis,* or *Streptococcus pneumoniae,* in pediatric patients 6 months of age and older.
- Community-acquired pneumonia due to *Chlamydophila pneumoniae*, *Haemophilus influenzae*, *Mycoplasma pneumoniae,* or *Streptococcus pneumoniae* in pediatric patients 6 months of age and older appropriate for oral therapy.
- Pharyngitis/tonsillitis caused by *Streptococcus pyogenes* as an alternative to first-line therapy in individuals who cannot use first-line therapy in pediatric patients 2 years of age and older.

1.3 Limitations of Use

Azithromycin is not recommended in patients with pneumonia who are judged to be inappropriate for oral therapy because of moderate to severe illness or risk factors such as any of the following:

- patients with cystic fibrosis,
- patients with nosocomial infections,
- patients with known or suspected bacteremia,
- patients requiring hospitalization,
- elderly or debilitated patients, or
- patients with significant underlying health problems that may compromise their ability to respond to their illness (including immunodeficiency or functional asplenia).

1.4 Usage

To reduce the development of drug-resistant bacteria and maintain the effectiveness of ZITHROMAX and other antibacterial drugs, ZITHROMAX 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.

2 DOSAGE AND ADMINISTRATION

2.1 Recommended Dosage for Adult Patients

Recommended dosages and durations of therapy in adult patient populations vary by indications *[see Indications and Usage (1.1) and Clinical Pharmacology (12.3)]*.

ZITHROMAX tablets and ZITHROMAX for oral suspension can be taken with or without food.

Table 1. Recommended dosage for Adult Patients by Indication	
Infection*	**Recommended Dose/Duration of Therapy**
Community-acquired pneumonia Pharyngitis/tonsillitis (second-line therapy) Skin/skin structure (uncomplicated)	500 mg as a single dose on Day 1, followed by 250 mg once daily on Days 2 through 5
Acute bacterial exacerbations of chronic obstructive pulmonary disease	500 mg once daily for 3 days OR 500 mg as a single dose on Day 1, followed by 250 mg once daily on Days 2 through 5
Acute bacterial sinusitis	500 mg once daily for 3 days
Genital ulcer disease (chancroid)	One single 1 gram dose
Non-gonococcal urethritis and cervicitis	One single 1 gram dose
Gonococcal urethritis and cervicitis	One single 2 gram dose
* Due to the indicated microorganisms *[see Indications and Usage (1.1)]*.	

2.2 Recommended Dosage for Pediatric Patients

Recommended dosages and durations of therapy in pediatric patient populations vary by indications *[see Indications and Usage (1.2) and Clinical Pharmacology (12.3)]*.

ZITHROMAX for oral suspension can be taken with or without food.

Table 2. Recommended dose for Pediatric Patients by Indication	
Infection*	**Recommended Dose/Duration of Therapy[1]**
Acute otitis media	30 mg/kg as a single dose or 10 mg/kg once daily for 3 days or 10 mg/kg as a single dose on Day 1 followed by 5 mg/kg/day on Days 2 through 5.
Acute bacterial sinusitis	10 mg/kg once daily for 3 days.
Community-acquired pneumonia	10 mg/kg as a single dose on Day 1 followed by 5 mg/kg once daily on Days 2 through 5.
Pharyngitis/tonsillitis	12 mg/kg once daily for 5 days.
* Due to the indicated microorganisms *[see Indications and Usage (1.2) and Use in Specific Populations (8.4)]*. [1] *see dosing tables below for maximum doses evaluated by indication.*	

PEDIATRIC DOSAGE GUIDELINES FOR OTITIS MEDIA, ACUTE BACTERIAL SINUSITIS, AND COMMUNITY-ACQUIRED PNEUMONIA
(Age 6 months and above, *[see Use in Specific Populations (8.4)]*)
Based on Body Weight

Table 3. Otitis Media and Community-Acquired Pneumonia: (5-Day Regimen)*						
Dosing Calculated on 10 mg/kg/day Day 1 and 5 mg/kg/day Days 2 to 5.						
Weight	**100 mg/5 mL**		**200 mg/5 mL**		**Total mL per Treatment Course**	**Total mg per Treatment Course**
Kg	**Day 1**	**Days 2-5**	**Day 1**	**Days 2-5**		
5	2.5 mL; (½ tsp)	1.25 mL;(¼ tsp)			7.5 mL	150 mg
10	5 mL; (1tsp)	2.5 mL; (½ tsp)			15 mL	300 mg
20			5 mL; (1 tsp)	2.5 mL; (½ tsp)	15 mL	600 mg
30			7.5 mL; (1½ tsp)	3.75 mL; (¾ tsp)	22.5 mL	900 mg
40			10 mL; (2 tsp)	5 mL; (1 tsp)	30 mL	1200 mg
50 and above			12.5 mL; (2½ tsp)	6.25 mL; (1¼ tsp)	37.5 mL	1500 mg
* Effectiveness of the 3-day or 1-day regimen in pediatric patients with community-acquired pneumonia has not been established *[see Use in Specific Populations (8.4)]*.						

Table 4. Otitis Media and Acute Bacterial Sinusitis: (3-Day Regimen)*				
Dosing Calculated on 10 mg/kg/day.				
Weight	**100 mg/5 mL**	**200 mg/5 mL**	**Total mL per Treatment Course**	**Total mg per Treatment Course**
Kg	**Days 1-3**	**Days 1-3**		
5	2.5 mL; (1/2 tsp)		7.5 mL	150 mg
10	5 mL; (1 tsp)		15 mL	300 mg
20		5 mL (1 tsp)	15 mL	600 mg
30		7.5 mL (1½ tsp)	22.5 mL	900 mg
40		10 mL (2 tsp)	30 mL	1200 mg
50 and above		12.5 mL (2 ½ tsp)	37.5 mL	1500 mg
* Effectiveness of the 5-day or 1-day regimen in pediatric patients with acute bacterial sinusitis has not been established *[see Use in Specific Populations (8.4)]*.				

Table 5. Otitis Media: (Single-dose Regimen)*			
Dosing Calculated on 30 mg/kg as a single dose.			
Weight Kg	200 mg/5 mL 1-Day Regimen	Total mL per Treatment Course	Total mg per Treatment Course
5	3.75 mL;(3/4 tsp)	3.75 mL	150 mg
10	7.5 mL;(1½ tsp)	7.5 mL	300 mg
20	15 mL;(3 tsp)	15 mL	600 mg
30	22.5 mL;(4½ tsp)	22.5 mL	900 mg
40	30 mL;(6 tsp)	30 mL	1200 mg
50 and above	37.5 mL;(7½ tsp)	37.5 mL	1500 mg

The safety of re-dosing azithromycin in pediatric patients who vomit after receiving 30 mg/kg as a single dose has not been established. In clinical studies involving 487 patients with acute otitis media given a single 30 mg/kg dose of azithromycin, 8 patients who vomited within 30 minutes of dosing were re-dosed at the same total dose.

2.3 Pediatric Dosage Guidelines for Pharyngitis/Tonsillitis

The recommended dose of ZITHROMAX for pediatric patients 2 years of age and older with pharyngitis/tonsillitis is 12 mg/kg once daily for 5 days *[see Use in Specific Populations (8.4)]*

PEDIATRIC DOSAGE GUIDELINES FOR PHARYNGITIS/TONSILLITIS
(Age 2 years and above, *[see Use in Specific Populations (8.4)]*)
Based on Body Weight

Table 6. Pharyngitis/Tonsillitis: (5-Day Regimen)			
Dosing Calculated on 12 mg/kg/day for 5 days.			
Weight Kg	200 mg/5 mL Day 1-5	Total mL per Treatment Course	Total mg per Treatment Course
8	2.5 mL; (½ tsp)	12.5 mL	500 mg
17	5 mL; (1 tsp)	25 mL	1000 mg
25	7.5 mL; (1½ tsp)	37.5 mL	1500 mg
33	10 mL; (2 tsp)	50 mL	2000 mg
40	12.5 mL; (2½ tsp)	62.5 mL	2500 mg

2.4 Preparation Instructions for ZITHROMAX for Oral Suspension

Constituting instructions for ZITHROMAX for Oral Suspension 300, 600, 900, 1200 mg bottles are described in table 7 below.

Table 7. Preparation of Zithromax for Oral Suspension: Volume of Water to add, Total Volume and Azithromycin Concentration After Constitution		
Volume of water to be added	Total volume after constitution (azithromycin content)	Azithromycin concentration after constitution
9 mL (300 mg)	15 mL (300 mg)	100 mg/5 mL
9 mL (600 mg)	15 mL (600 mg)	200 mg/5 mL
12 mL (900 mg)	22.5 mL (900 mg)	200 mg/5 mL
15 mL (1200 mg)	30 mL (1200 mg)	200 mg/5 mL

Shake well before each use. Oversized bottle provides shake space. Keep tightly closed.

After mixing, store constituted ZITHROMAX for oral suspension at 5° to 30°C (41° to 86°F) and use within 10 days. Discard after full dosing is completed.

3 DOSAGE FORMS AND STRENGTHS

ZITHROMAX 250 mg tablets are supplied as pink modified capsular shaped, engraved, film-coated tablets containing azithromycin dihydrate equivalent to 250 mg of azithromycin. ZITHROMAX 250 mg tablets are engraved with “PFIZER” on one side and “306” on the other, or “Pfizer” on one side and “ZTM 250” on the other.

ZITHROMAX 500 mg tablets are supplied as pink modified capsular shaped, engraved, film-coated tablets containing azithromycin dihydrate equivalent to 500 mg of azithromycin. ZITHROMAX 500 mg tablets are engraved with “Pfizer” on one side and “ZTM500” on the other.

ZITHROMAX for oral suspension after constitution contains a flavored suspension. ZITHROMAX for oral suspension is supplied to provide 100 mg/5 mL or 200 mg/5 mL suspension in bottles.

4 CONTRAINDICATIONS

4.1 Hypersensitivity
ZITHROMAX is contraindicated in patients with known hypersensitivity to azithromycin, erythromycin, any macrolide or ketolide drug.

4.2 Hepatic Dysfunction
ZITHROMAX is contraindicated in patients with a history of cholestatic jaundice/hepatic dysfunction associated with prior use of azithromycin.

5 WARNINGS AND PRECAUTIONS

5.1 Hypersensitivity
Serious allergic reactions, including angioedema, anaphylaxis, and dermatologic reactions including Acute Generalized Exanthematous Pustulosis (AGEP), Stevens-Johnson syndrome, and toxic epidermal necrolysis have been reported in patients on azithromycin therapy. *[see Contraindications (4.1)]*

Fatalities have been reported. Cases of Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) have also been reported. Despite initially successful symptomatic treatment of the allergic symptoms, when symptomatic therapy was discontinued, the allergic symptoms recurred soon thereafter in some patients without further azithromycin exposure. These patients required prolonged periods of observation and symptomatic treatment. The relationship of these episodes to the long tissue half-life of azithromycin and subsequent prolonged exposure to antigen is presently unknown.

If an allergic reaction occurs, the drug should be discontinued and appropriate therapy should be instituted. Physicians should be aware that allergic symptoms may reappear when symptomatic therapy has been discontinued.

5.2 Hepatotoxicity
Abnormal liver function, hepatitis, cholestatic jaundice, hepatic necrosis, and hepatic failure have been reported, some of which have resulted in death. Discontinue azithromycin immediately if signs and symptoms of hepatitis occur.

5.3 Infantile Hypertrophic Pyloric Stenosis (IHPS)
Following the use of azithromycin in neonates (treatment up to 42 days of life), IHPS has been reported. Direct parents and caregivers to contact their physician if vomiting or irritability with feeding occurs.

5.4 QT Prolongation
Prolonged cardiac repolarization and QT interval, imparting a risk of developing cardiac arrhythmia and torsades de pointes, have been seen with treatment with macrolides, including azithromycin. Cases of torsades de pointes have been spontaneously reported during postmarketing surveillance in patients receiving azithromycin. Providers should consider the risk of QT prolongation which can be fatal when weighing the risks and benefits of azithromycin for at-risk groups including:

- patients with known prolongation of the QT interval, a history of torsades de pointes, congenital long QT syndrome, bradyarrhythmias or uncompensated heart failure
- patients on drugs known to prolong the QT interval
- patients with ongoing proarrhythmic conditions such as uncorrected hypokalemia or hypomagnesemia, clinically significant bradycardia, and in patients receiving Class IA (quinidine, procainamide) or Class III (dofetilide, amiodarone, sotalol) antiarrhythmic agents.

Elderly patients may be more susceptible to drug-associated effects on the QT interval.

5.5 Cardiovascular Death
Some observational studies have shown an approximately two-fold increased short-term potential risk of acute cardiovascular death in adults exposed to azithromycin relative to other antibacterial drugs, including amoxicillin. The five-day cardiovascular mortality observed in these studies ranged from 20 to 400 per million azithromycin treatment courses. This potential risk was noted to be greater during the first five days of azithromycin use and does not appear to be limited to those patients with preexisting cardiovascular diseases. The data in these observational studies are insufficient to establish or exclude a causal relationship between acute

cardiovascular death and azithromycin use. Consider balancing this potential risk with treatment benefits when prescribing ZITHROMAX.

5.6 *Clostridioides difficile*-Associated Diarrhea

Clostridioides difficile-associated diarrhea (CDAD) has been reported with use of nearly all antibacterial agents, including ZITHROMAX, and may range in severity from mild diarrhea to fatal colitis. Treatment with antibacterial agents alters the normal flora of 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 antibacterial therapy and may require colectomy. CDAD must be considered in all patients who present with diarrhea following antibiotic use. Careful medical history is necessary since CDAD has been reported to occur over two months after the administration of antibacterial agents.

If CDAD is suspected or confirmed, ongoing antibiotic use not directed against *C. difficile* may need to be discontinued. Appropriate fluid and electrolyte management, protein supplementation, antibiotic treatment of *C. difficile*, and surgical evaluation should be instituted as clinically indicated.

5.7 Exacerbation of Myasthenia Gravis

Exacerbation of symptoms of myasthenia gravis and new onset of myasthenic syndrome have been reported in patients receiving azithromycin therapy.

5.8 Risk of Antibacterial Resistance in Sexually Transmitted Infections

ZITHROMAX, at the recommended dose, should not be relied upon to treat syphilis. Antibacterial agents used to treat non-gonococcal urethritis may mask or delay the symptoms of incubating syphilis. All patients with sexually transmitted urethritis or cervicitis should have a serologic test for syphilis and appropriate testing for gonorrhea performed at the time of diagnosis. Appropriate antibacterial therapy and follow-up tests for these diseases should be initiated if infection is confirmed.

5.9 Development of Drug-Resistant Bacteria

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

6 ADVERSE REACTIONS

The following clinically significant adverse reactions are described elsewhere in labeling:

- Hypersensitivity *[see Warnings and Precautions (5.1)]*
- Hepatotoxicity *[see Warnings and Precautions (5.2)]*
- Infantile Hypertrophic Pyloric Stenosis (IHPS) *[see Warnings and Precautions (5.3)]*
- QT Prolongation *[see Warnings and Precautions (5.4)]*
- Cardiovascular Death *[see Warnings and Precautions (5.5)]*
- *Clostridioides difficile*-Associated Diarrhea (CDAD) *[see Warnings and Precautions (5.6)]*
- Exacerbation of Myasthenia Gravis *[see Warnings and Precautions (5.7)]*

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

In clinical trials, most of the reported side effects were mild to moderate in severity and were reversible upon discontinuation of the drug. Potentially serious adverse reactions of angioedema and cholestatic jaundice were reported. Approximately 0.7% of the patients (adults and pediatric patients) from the 5-day multiple-dose clinical trials discontinued ZITHROMAX therapy because of treatment-related adverse reactions. In adults given 500 mg/day for 3 days, the discontinuation rate due to treatment-related adverse reactions was 0.6%. In clinical trials in pediatric patients given 30 mg/kg, either as a single dose or over 3 days, discontinuation from the trials due to treatment-related adverse reactions was approximately 1%. Most of the adverse reactions leading to discontinuation were related to the gastrointestinal tract, e.g., nausea, vomiting, diarrhea, or abdominal pain. *[see Clinical Studies (14.2)]*

Clinical Trials Experience in Adults

Multiple-dose regimens: Overall, the most common treatment-related adverse reactions in adult patients receiving multiple-dose regimens of ZITHROMAX were related to the gastrointestinal system with diarrhea/loose stools (4 to 5%), nausea (3%), and abdominal pain (2 to 3%) being the most frequently reported.

No other adverse reactions occurred in patients on the multiple-dose regimens of ZITHROMAX with a frequency greater than 1%. Adverse reactions that occurred with a frequency of 1% or less included the following:

Cardiovascular: Palpitations, chest pain.
Gastrointestinal: Dyspepsia, flatulence, vomiting, melena, and cholestatic jaundice.
Genitourinary: Monilia, vaginitis, and nephritis.
Nervous System: Dizziness, headache, vertigo, and somnolence.
General: Fatigue.
Allergic: Rash, pruritus, photosensitivity, and angioedema.

Single 1-gram dose regimen:
Overall, the most common adverse reactions in patients receiving a single-dose regimen of 1 gram of ZITHROMAX were related to the gastrointestinal system and were more frequently reported than in patients receiving the multiple-dose regimen.

Adverse reactions that occurred in patients on the single 1-gram dosing regimen of ZITHROMAX with a frequency of 1% or greater included diarrhea/loose stools (7%), nausea (5%), abdominal pain (5%), vomiting (2%), dyspepsia (1%), and vaginitis (1%).

Single 2-gram dose regimen:
Overall, the most common adverse reactions in patients receiving a single 2-gram dose of ZITHROMAX were related to the gastrointestinal system. Adverse reactions that occurred in patients in this study with a frequency of 1% or greater included nausea (18%), diarrhea/loose stools (14%), vomiting (7%), abdominal pain (7%), vaginitis (2%), dyspepsia (1%), and dizziness (1%). The majority of these complaints were mild in nature.

Clinical Trials Experience in Pediatric Patients
Single and Multiple-dose regimens: The types of adverse reactions in pediatric patients were comparable to those seen in adults, with different incidence rates for the dosage regimens recommended in pediatric patients.

Acute Otitis Media: For the recommended total dosage regimen of 30 mg/kg, the most frequent adverse reactions (≥1%) attributed to treatment were diarrhea, abdominal pain, vomiting, nausea, and rash. *[see Dosage and Administration (2)* and *Clinical Studies (14.2)]*

The incidence, based on dosing regimen, is described in table 8 below:

Table 8. Incidence of Adverse Reactions in Pediatric Patients Treated for Acute Otitis Media

Dosage Regimen	Diarrhea %	Abdominal Pain %	Vomiting %	Nausea %	Rash %
1-day	4.3%	1.4%	4.9%	1.0%	1.0%
3-day	2.6%	1.7%	2.3%	0.4%	0.6%
5-day	1.8%	1.2%	1.1%	0.5%	0.4%

Community-Acquired Pneumonia: For the recommended dosage regimen of 10 mg/kg on Day 1 followed by 5 mg/kg on Days 2-5, the most frequent adverse reactions attributed to treatment were diarrhea/loose stools, abdominal pain, vomiting, nausea, and rash.

The incidence is described in table 9 below:

Table 9. Incidence of Adverse Reactions in Pediatric Patients Treated for Community-Acquired Pneumonia

Dosage Regimen	Diarrhea/Loose stools %	Abdominal Pain %	Vomiting %	Nausea %	Rash %
5-day	5.8%	1.9%	1.9%	1.9%	1.6%

Pharyngitis/Tonsillitis: For the recommended dosage regimen of 12 mg/kg on Days 1-5, the most frequent adverse reactions attributed to treatment were diarrhea, vomiting, abdominal pain, nausea, and headache.

The incidence is described in table 10 below:

Table 10. Incidence of Adverse Reactions in Pediatric Patients Treated for Pharyngitis/Tonsillitis

Dosage Regimen	Diarrhea %	Abdominal Pain %	Vomiting %	Nausea %	Rash %	Headache %
5-day	5.4%	3.4%	5.6%	1.8%	0.7%	1.1%

With any of the treatment regimens, no other adverse reactions occurred in pediatric patients treated with ZITHROMAX with a frequency greater than 1%. Adverse reactions that occurred with a frequency of 1% or less included the following:

Cardiovascular: Chest pain.
Gastrointestinal: Dyspepsia, constipation, anorexia, enteritis, flatulence, gastritis, jaundice, loose stools, and oral moniliasis.
Hematologic and Lymphatic: Anemia and leukopenia.
Nervous System: Headache (otitis media dosage), hyperkinesia, dizziness, agitation, nervousness, and insomnia.
General: Fever, face edema, fatigue, fungal infection, malaise, and pain.
Allergic: Rash and allergic reaction.
Respiratory: Cough, pharyngitis, pleural effusion, and rhinitis.
Skin and Appendages: Eczema, fungal dermatitis, pruritus, sweating, urticaria, and vesiculobullous rash.
Special Senses: Conjunctivitis.

6.2 Postmarketing Experience

The following adverse reactions have been identified during post-approval use of azithromycin. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Adverse reactions reported with azithromycin during the postmarketing period in adult and/or pediatric patients for which a causal relationship may not be established include:

Allergic: Arthralgia, edema, urticaria, and angioedema.
Cardiovascular: Arrhythmias including ventricular tachycardia and hypotension. There have been reports of QT prolongation, torsades de pointes, and cardiovascular death.
Gastrointestinal: Anorexia, constipation, dyspepsia, flatulence, vomiting/diarrhea, pseudomembranous colitis, pancreatitis, oral candidiasis, pyloric stenosis, and reports of tongue discoloration.
General: Asthenia, paresthesia, fatigue, malaise, and anaphylaxis.
Genitourinary: Interstitial nephritis and acute renal failure and vaginitis.
Hematopoietic: Thrombocytopenia.
Liver/Biliary: Abnormal liver function, hepatitis, cholestatic jaundice, hepatic necrosis, and hepatic failure. *[see Warnings and Precautions (5.2)]*
Nervous System: Convulsions, dizziness/vertigo, headache, somnolence, hyperactivity, nervousness, agitation, and syncope.
Psychiatric: Aggressive reaction and anxiety.
Skin/Appendages: Pruritus serious skin reactions including erythema multiforme, AGEP, Stevens-Johnson Syndrome, toxic epidermal necrolysis, and DRESS.
Special Senses: Hearing disturbances including hearing loss, deafness and/or tinnitus, and reports of taste/smell perversion and/or loss.

6.3 Laboratory Abnormalities

Adults

Clinically significant abnormalities (irrespective of drug relationship) occurring during the clinical trials were reported as follows: with an incidence of greater than 1%: decreased hemoglobin, hematocrit, lymphocytes, neutrophils, and blood glucose; elevated serum creatine phosphokinase, potassium, ALT, GGT, AST, BUN, creatinine, blood glucose, platelet count, lymphocytes, neutrophils, and eosinophils; with an incidence of less than 1%: leukopenia, neutropenia, decreased sodium, potassium, platelet count, elevated monocytes, basophils, bicarbonate, serum alkaline phosphatase, bilirubin, LDH, and phosphate. The majority of subjects with elevated serum creatinine also had abnormal values at baseline. When follow-up was provided, changes in laboratory tests appeared to be reversible.

In multiple-dose clinical trials involving more than 5000 patients, four patients discontinued therapy because of treatment-related liver enzyme abnormalities and one because of a renal function abnormality.

Pediatric Patients

One, Three, and Five-Day Regimens

Laboratory data collected from comparative clinical trials employing two 3-day regimens (30 mg/kg or 60 mg/kg in divided doses over 3 days), or two 5-day regimens (30 mg/kg or 60 mg/kg in divided doses over 5 days) were similar for regimens of azithromycin and all comparators combined, with most clinically significant laboratory abnormalities occurring at incidences of 1-5%. Laboratory data for patients receiving 30 mg/kg as a single dose were collected in one single center trial. In that trial, an absolute neutrophil count between 500-1500 cells/mm^3 was observed in 10/64 patients receiving 30 mg/kg as a single dose, 9/62 patients receiving 30 mg/kg given over 3 days, and 8/63 comparator patients. No patient had an absolute neutrophil count <500 cells/mm^3.

In multiple-dose clinical trials involving approximately 4700 pediatric patients, no patients discontinued therapy because of treatment-related laboratory abnormalities.

7 DRUG INTERACTIONS

7.1 Nelfinavir
Co-administration of nelfinavir at steady-state with a single oral dose of azithromycin resulted in increased azithromycin serum concentrations. Although a dose adjustment of azithromycin is not recommended when administered in combination with nelfinavir, close monitoring for known adverse reactions of azithromycin, such as liver enzyme abnormalities and hearing impairment, is warranted. *[see Adverse Reactions (6)]*

7.2 Warfarin
Spontaneous postmarketing reports suggest that concomitant administration of azithromycin may potentiate the effects of oral anticoagulants such as warfarin, although the prothrombin time was not affected in the dedicated drug interaction study with azithromycin and warfarin. Prothrombin times should be carefully monitored while patients are receiving azithromycin and oral anticoagulants concomitantly.

7.3 Potential Drug-Drug Interaction with Macrolides
Interactions with digoxin, colchicine or phenytoin have not been reported in clinical trials with azithromycin. No specific drug interaction studies have been performed to evaluate potential drug-drug interaction. However, drug interactions have been observed with other macrolide products. Until further data are developed regarding drug interactions when digoxin, colchicine or phenytoin are used with azithromycin careful monitoring of patients is advised.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy
Risk Summary

Available data from published literature and postmarketing experience over several decades with azithromycin use in pregnant women have not identified any drug-associated risks for major birth defects, miscarriage, or adverse maternal or fetal outcomes *(see Data)*. Developmental toxicity studies with azithromycin in rats, mice, and rabbits showed no drug-induced fetal malformations at doses up to 4, 2, and 2 times, respectively, an adult human daily dose of 500 mg based on body surface area. Decreased viability and delayed development were observed in the offspring of pregnant rats administered azithromycin from day 6 of pregnancy through weaning at a dose equivalent to 4 times an adult human daily dose of 500 mg based on body surface area *(see Data)*.

The estimated background risk of major birth defects and miscarriage for the indicated populations is unknown. All pregnancies have a background risk of birth defect, loss, or other adverse outcomes. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2 to 4% and 15 to 20%, respectively.

Data

Human Data

Available data from published observational studies, case series, and case reports over several decades do not suggest an increased risk for major birth defects, miscarriage, or adverse maternal or fetal outcomes with azithromycin use in pregnant women. Limitations of these data include the lack of randomization and inability to control for confounders such as underlying maternal disease and maternal use of concomitant medications.

Animal Data

Azithromycin administered during the period of organogenesis did not cause fetal malformations in rats and mice at oral doses up to 200 mg/kg/day (moderately maternally toxic). Based on body surface area, this dose is approximately 4 (rats) and 2 (mice) times an adult human daily dose of 500 mg. In rabbits administered azithromycin at oral doses of 10, 20, and 40 mg/kg/day during organogenesis, reduced maternal body weight and food consumption were observed in all groups; no evidence of fetotoxicity or teratogenicity was observed at these doses, the highest of which is estimated to be 2 times an adult human daily dose of 500 mg based on body surface area.

In a pre- and postnatal development study, azithromycin was administered orally to pregnant rats from day 6 of pregnancy until weaning at doses of 50 or 200 mg/kg/day. Maternal toxicity (reduced food consumption and body weight gain; increased stress at parturition) was observed at the higher dose. Effects in the offspring were noted at 200 mg/kg/day during the postnatal development period (decreased viability, delayed developmental landmarks). These effects were not observed in a pre- and postnatal rat study when up to 200 mg/kg/day of azithromycin was given orally beginning on day 15 of pregnancy until weaning.

8.2 Lactation
Risk Summary

Azithromycin is present in human milk *(see Data)*. Non-serious adverse reactions have been reported in breastfed infants after maternal administration of azithromycin *(see Clinical Considerations)*. There are no available data on the effects of azithromycin on

milk production. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for ZITHROMAX and any potential adverse effects on the breastfed infant from ZITHROMAX or from the underlying maternal condition.

Clinical Considerations
Advise women to monitor the breastfed infant for diarrhea, vomiting, or rash.

Data
Azithromycin breastmilk concentrations were measured in 20 women after receiving a single 2 g oral dose of azithromycin during labor. Breastmilk samples collected on days 3 and 6 postpartum as well as 2 and 4 weeks postpartum revealed the presence of azithromycin in breastmilk up to 4 weeks after dosing. In another study, a single dose of azithromycin 500 mg was administered intravenously to 8 women prior to incision for cesarean section. Breastmilk (colostrum) samples obtained between 12 and 48 hours after dosing revealed that azithromycin persisted in breastmilk up to 48 hours.

8.4 Pediatric Use
[see Clinical Pharmacology (12.3), Indications and Usage (1.2), and *Dosage and Administration (2.2)]*

Safety and effectiveness in the treatment of pediatric patients with acute otitis media, acute bacterial sinusitis and community-acquired pneumonia under 6 months of age have not been established. Use of ZITHROMAX for the treatment of acute bacterial sinusitis and community-acquired pneumonia in pediatric patients (6 months of age or greater) is supported by adequate and well-controlled trials in adults.

Pharyngitis/Tonsillitis: Safety and effectiveness in the treatment of pediatric patients with pharyngitis/tonsillitis under 2 years of age have not been established.

8.5 Geriatric Use
In multiple-dose clinical trials of oral azithromycin, 9% of patients were at least 65 years of age (458/4949) and 3% of patients (144/4949) were at least 75 years of age. 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 response between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

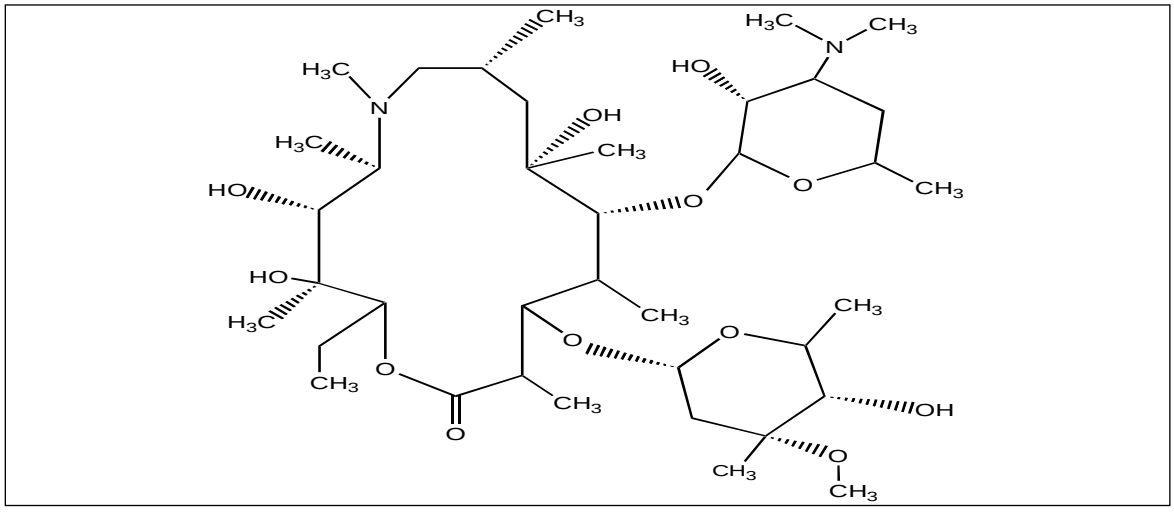
Elderly patients may be more susceptible to development of torsades de pointes arrhythmias than younger patients. *[see Warnings and Precautions (5.4)]*

10 OVERDOSAGE

Adverse reactions experienced at higher than recommended doses were similar to those seen at normal doses particularly nausea, diarrhea, and vomiting. In the event of overdosage, general symptomatic and supportive measures are indicated as required.

11 DESCRIPTION

ZITHROMAX (azithromycin tablets, USP and azithromycin for oral suspension, USP) contain the active ingredient azithromycin, a macrolide antibacterial drug, for oral administration. Azithromycin has the chemical name (2R,3S,4R,5R,8R,10R,11R,12S,13S,14R)-13-[(2,6-dideoxy-3-C-methyl-3-O-methyl-α-L-ribo-hexopyranosyl) oxy]-2-ethyl-3,4,10-trihydroxy-3,5,6,8,10,12,14-heptamethyl-11-[[3,4,6-trideoxy-3(dimethylamino-)-β-D-xylohexopyranosyl-]oxy]-1-oxa-6-azacyclopentadecan-15 one. Azithromycin is derived from erythromycin; however, it differs chemically from erythromycin in that a -methyl substituted- nitrogen atom is incorporated into the lactone ring. Its molecular formula is C38H72N2O12, and its molecular weight is 749.00. Azithromycin has the following structural formula:



Azithromycin, as the dihydrate, is a white crystalline powder with a molecular formula of C38H72N2O12•2H2O and a molecular weight of 785.0.

ZITHROMAX tablets (azithromycin tablets, USP) is supplied as tablets containing azithromycin dihydrate equivalent to either 250 mg or 500 mg azithromycin and the following inactive ingredients: D&C Red #30 aluminum lake, dibasic calcium phosphate anhydrous, hypromellose, lactose, magnesium stearate, pregelatinized starch, sodium croscarmellose, sodium lauryl sulfate, titanium dioxide, and triacetin.

ZITHROMAX for oral suspension (azithromycin for oral suspension, USP) is supplied in bottles containing azithromycin dihydrate powder equivalent to 300 mg, 600 mg, 900 mg, or 1200 mg azithromycin per bottle and the following inactive ingredients: FD&C Red#40, hydroxypropyl cellulose, sodium phosphate tribasic anhydrous, sucrose, xanthan gum, and spray dried artificial banana, cherry, and creme de vanilla flavors. After constitution, each 5 mL of suspension contains 100 mg or 200 mg of azithromycin.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Azithromycin is a macrolide antibacterial drug. *[see Microbiology (12.4)]*

12.2 Pharmacodynamics

Based on animal models of infection, the antibacterial activity of azithromycin appears to correlate with the ratio of area under the concentration-time curve to minimum inhibitory concentration (AUC/MIC) for certain pathogens (*S. pneumoniae* and *S. aureus*). The principal pharmacokinetic/pharmacodynamic parameter best associated with clinical and microbiological cure has not been elucidated in clinical trials with azithromycin.

Cardiac Electrophysiology

QTc interval prolongation was studied in a randomized, placebo-controlled parallel trial in 116 healthy subjects who received either chloroquine (1000 mg) alone or in combination with oral azithromycin (500 mg, 1000 mg, and 1500 mg once daily). Co-administration of azithromycin increased the QTc interval in a dose- and concentration- dependent manner. In comparison to chloroquine alone, the maximum mean (95% upper confidence bound) increases in QTcF were 5 (10) ms, 7 (12) ms and 9 (14) ms with the co-administration of 500 mg, 1000 mg and 1500 mg azithromycin, respectively.

12.3 Pharmacokinetics

Following oral administration of a single 500 mg dose (two 250 mg tablets) to 36 fasted healthy male volunteers, the mean (SD) pharmacokinetic parameters were AUC_{0-72}=4.3 (1.2) mcg·hr/mL; C_{max}=0.5 (0.2) mcg/mL; T_{max}=2.2 (0.9) hours. Two azithromycin 250 mg tablets are bioequivalent to a single 500 mg tablet.

In a two-way crossover study, 12 adult healthy volunteers (6 males, 6 females) received 1500 mg of azithromycin administered in single daily doses over either 5 days (two 250 mg tablets on day 1, followed by one 250 mg tablet on days 2-5) or 3 days (500 mg per day for days 1-3). Due to limited serum samples on day 2 (3-day regimen) and days 2-4 (5-day regimen), the serum concentration-time profile of each subject was fit to a 3-compartment model and the $AUC_{0-\infty}$ for the fitted concentration profile was comparable between the 5-day and 3-day regimens.

Table 11. Pharmacokinetic Parameters for Adult Patients Receiving a 3-Day and 5-Day Oral Regimen

	3-Day Regimen		5-Day Regimen	
Pharmacokinetic Parameter [mean (SD)]	**Day 1**	**Day 3**	**Day 1**	**Day 5**
C_{max} (serum, mcg/mL)	0.44 (0.22)	0.54 (0.25)	0.43 (0.20)	0.24 (0.06)
Serum $AUC_{0-\infty}$ (mcg·hr/mL)	17.4 (6.2)*		14.9 (3.1)*	
Serum $T_{1/2}$	71.8 hr		68.9 hr	
*Total AUC for the entire 3-day and 5-day regimens.				

Absorption

The absolute bioavailability of azithromycin 250 mg capsules is 38%.

In a two-way crossover study in which 12 healthy subjects received a single 500 mg dose of azithromycin (two 250 mg tablets) with or without a high fat meal, food was shown to increase C_{max} by 23% but had no effect on AUC.

When azithromycin oral suspension was administered with food to 28 adult healthy male subjects, C_{max} increased by 56% and AUC was unchanged.

Distribution

The serum protein binding of azithromycin is variable in the concentration range approximating human exposure, decreasing from 51% at 0.02 mcg/mL to 7% at 2 mcg/mL.

The antibacterial activity of azithromycin is pH related and appears to be reduced with decreasing pH, However, the extensive distribution of drug to tissues may be relevant to clinical activity.

Azithromycin has been shown to penetrate into human tissues, including skin, lung, tonsil, and cervix. Extensive tissue distribution was confirmed by examination of additional tissues and fluids (bone, ejaculum, prostate, ovary, uterus, salpinx, stomach, liver, and gallbladder). As there are no data from adequate and well-controlled studies of azithromycin treatment of infections in these additional body sites, the clinical significance of these tissue concentration data is unknown.

Following a regimen of 500 mg on the first day and 250 mg daily for 4 days, very low concentrations were noted in cerebrospinal fluid (less than 0.01 mcg/mL) in the presence of noninflamed meninges.

Elimination

Metabolism

In vitro and *in vivo* studies to assess the metabolism of azithromycin have not been performed.

Excretion

Plasma concentrations of azithromycin following single 500 mg oral and IV doses declined in a polyphasic pattern resulting in a mean apparent plasma clearance of 630 mL/min and terminal elimination half-life of 68 hr. The prolonged terminal half-life is thought to be due to extensive uptake and subsequent release of drug from tissues. Biliary excretion of azithromycin, predominantly as unchanged drug, is a major route of elimination. Over the course of a week, approximately 6% of the administered dose appears as unchanged drug in urine.

Specific Populations

Patients with Renal Impairment

Azithromycin pharmacokinetics was investigated in 42 adults (21 to 85 years of age) with varying degrees of renal impairment. Following the oral administration of a single 1.0 g dose of azithromycin (4 x 250 mg capsules), mean C_{max} and AUC_{0-120} increased by 5.1% and 4.2%, respectively, in subjects with GFR 10 to 80 mL/min compared to subjects with GFR >80 mL/min. The mean C_{max} and AUC_{0-120} increased 61% and 35%, respectively, in subjects with GFR <10 mL/min compared to subjects with GFR >80 mL/min.

Patients with Hepatic Impairment
The pharmacokinetics of azithromycin in subjects with hepatic impairment has not been established.

Male and Female Patients
There are no significant differences in the disposition of azithromycin between male and female subjects. No dosage adjustment is recommended based on gender.

Geriatric Patients
Pharmacokinetic parameters in older volunteers (65 to 85 years old) were similar to those in young adults (18 to 40 years old) for the 5-day therapeutic regimen. Dosage adjustment does not appear to be necessary for older patients with normal renal and hepatic function receiving treatment with this dosage regimen. *[see Geriatric Use (8.5)]*

Pediatric Patients
In two clinical studies, azithromycin for oral suspension was dosed at 10 mg/kg on day 1, followed by 5 mg/kg on days 2 through 5 in two groups of pediatric patients (aged 1-5 years and 5-15 years, respectively). The mean pharmacokinetic parameters on day 5 were C_{max}=0.216 mcg/mL, T_{max}=1.9 hr, and AUC_{0-24}=1.822 mcg·hr/mL for the 1 to 5-year-old group and were C_{max}=0.383 mcg/mL, T_{max}=2.4 hr, and AUC_{0-24}=3.109 mcg·hr/mL for the 5 to 15-year-old group.

In another study, 33 pediatric patients received doses of 12 mg/kg/day (maximum daily dose 500 mg) for 5 days, of whom 31 patients were evaluated for azithromycin pharmacokinetics following a low fat breakfast. In this study, azithromycin concentrations were determined over a 24 hr period following the last daily dose. Patients weighing above 41.7 kg received the maximum adult daily dose of 500 mg. Seventeen patients (weighing 41.7 kg or less) received a total dose of 60 mg/kg. The table 12 shows pharmacokinetic data in the subset of pediatric patients who received a total dose of 60 mg/kg.

Table 12. Pharmacokinetic Parameters for Pediatric Patients Receiving 12 mg/kg/day (5-day Regimen)

Pharmacokinetic Parameter [mean (SD)]	**5-Day Regimen (12 mg/kg for 5 days)**
N	**17**
C_{max} (mcg/mL)	0.5 (0.4)
T_{max} (hr)	2.2 (0.8)
AUC_{0-24} (mcg·hr/mL)	3.9 (1.9)

Single dose pharmacokinetics of azithromycin in pediatric patients given doses of 30 mg/kg have not been studied. *[see Dosage and Administration (2)]*

Drug Interaction Studies
Drug interaction studies were performed with azithromycin and other drugs likely to be co-administered. The effects of co-administration of azithromycin on the pharmacokinetics of other drugs are shown in Table 13 and the effects of other drugs on the pharmacokinetics of azithromycin are shown in Table 14.

Co-administration of azithromycin at therapeutic doses had a modest effect on the pharmacokinetics of the drugs listed in Table 13. No dosage adjustment of drugs listed in Table 13 is recommended when co-administered with azithromycin.

Co-administration of azithromycin with efavirenz or fluconazole had a modest effect on the pharmacokinetics of azithromycin. Nelfinavir significantly increased the C_{max} and AUC of azithromycin. No dosage adjustment of azithromycin is recommended when administered with drugs listed in Table 14. *[see Drug Interactions (7.3)]*

Table 13. Drug Interactions: Pharmacokinetic Parameters for Co-administered Drugs in the Presence of Azithromycin

Co-administered Drug	**Dose of Co-administered Drug**	**Dose of Azithromycin**	n	**Ratio (with/without azithromycin) of Co-administered Drug Pharmacokinetic Parameters (90% CI); No Effect = 1.00**	
				Mean C_{max}	**Mean AUC**
Atorvastatin	10 mg/day for 8 days	500 mg/day orally on days 6-8	12	0.83 (0.63 to 1.08)	1.01 (0.81 to 1.25)
Carbamazepine	200 mg/day for 2 days, then 200 mg twice a day for 18 days	500 mg/day orally for days 16-18	7	0.97 (0.88 to 1.06)	0.96 (0.88 to 1.06)
Cetirizine	20 mg/day for 11 days	500 mg orally on day 7, then 250 mg/day on days 8-11	14	1.03 (0.93 to 1.14)	1.02 (0.92 to 1.13)

Table 13. Drug Interactions: Pharmacokinetic Parameters for Co-administered Drugs in the Presence of Azithromycin					
Co-administered Drug	**Dose of Co-administered Drug**	**Dose of Azithromycin**	n	**Ratio (with/without azithromycin) of Co-administered Drug Pharmacokinetic Parameters (90% CI); No Effect = 1.00**	
				Mean C_{max}	**Mean AUC**
Didanosine	200 mg orally twice a day for 21 days	1200 mg/day orally on days 8-21	6	1.44 (0.85 to 2.43)	1.14 (0.83 to 1.57)
Efavirenz	400 mg/day for 7 days	600 mg orally on day 7	14	1.04*	0.95*
Fluconazole	200 mg orally single dose	1200 mg orally single dose	18	1.04 (0.98 to 1.11)	1.01 (0.97 to 1.05)
Indinavir	800 mg three times a day for 5 days	1200 mg orally on day 5	18	0.96 (0.86 to 1.08)	0.90 (0.81 to 1.00)
Midazolam	15 mg orally on day 3	500 mg/day orally for 3 days	12	1.27 (0.89 to 1.81)	1.26 (1.01 to 1.56)
Nelfinavir	750 mg three times a day for 11 days	1200 mg orally on day 9	14	0.90 (0.81 to 1.01)	0.85 (0.78 to 0.93)
Sildenafil	100 mg on days 1 and 4	500 mg/day orally for 3 days	12	1.16 (0.86 to 1.57)	0.92 (0.75 to 1.12)
Theophylline	4 mg/kg IV on days 1, 11, 25	500 mg orally on day 7, 250 mg/day on days 8-11	10	1.19 (1.02 to 1.40)	1.02 (0.86 to 1.22)
Theophylline	300 mg orally twice a day for 15 days	500 mg orally on day 6, then 250 mg/day on days 7-10	8	1.09 (0.92 to 1.29)	1.08 (0.89 to 1.31)
Triazolam	0.125 mg on day 2	500 mg orally on day 1, then 250 mg/day on day 2	12	1.06*	1.02*
Trimethoprim/ Sulfamethoxazole	160 mg/800 mg/day orally for 7 days	1200 mg orally on day 7	12	0.85 (0.75 to 0.97)/0.90 (0.78 to 1.03)	0.87 (0.80 to 0.95)/0.96 (0.88 to 1.03)
Zidovudine	500 mg/day orally for 21 days	600 mg/day orally for 14 days	5	1.12 (0.42 to 3.02)	0.94 (0.52 to 1.70)
Zidovudine	500 mg/day orally for 21 days	1200 mg/day orally for 14 days	4	1.31 (0.43 to 3.97)	1.30 (0.69 to 2.43)
* - 90% Confidence interval not reported					

Table 14. Drug Interactions: Pharmacokinetic Parameters for Azithromycin in the Presence of Co-administered Drugs. *[see Drug Interactions (7)]*					
Co-administered Drug	**Dose of Co-administered Drug**	**Dose of Azithromycin**	**n**	**Ratio (with/without co-administered drug) of Azithromycin Pharmacokinetic Parameters (90% CI); No Effect = 1.00**	
				Mean C_{max}	**Mean AUC**
Efavirenz	400 mg/day for 7 days	600 mg orally on day 7	14	1.22 (1.04 to 1.42)	0.92*
Fluconazole	200 mg orally single dose	1200 mg orally single dose	18	0.82 (0.66 to 1.02)	1.07 (0.94 to 1.22)
Nelfinavir	750 mg three times a day for 11 days	1200 mg orally on day 9	14	2.36 (1.77 to 3.15)	2.12 (1.80 to 2.50)
Oral Antacids (Aluminum Hydroxide, Magnesium Hydroxide)	1350 mg aluminum hydroxide and 1200 mg of magnesium hydroxide single dose on day 1 or day 8	500 mg orally on day 1 and day 8	10	0.765*	0.984*
* - 90% Confidence interval not reported					

12.4 Microbiology

Mechanism of Action

Azithromycin acts by binding to the 23S rRNA of the 50S ribosomal subunit of susceptible microorganisms inhibiting bacterial protein synthesis and impeding the assembly of the 50S ribosomal subunit.

Resistance

Azithromycin demonstrates cross resistance with erythromycin. The most frequently encountered mechanism of resistance to azithromycin is modification of the 23S rRNA target, most often by methylation. Ribosomal modifications can determine cross resistance to other macrolides, lincosamides, and streptogramin B (MLS_B phenotype).

Antimicrobial Activity
Azithromycin has been shown to be active against most isolates of the following microorganisms, both *in vitro* and in clinical infections. *[see Indications and Usage (1)]*

Gram-Positive Bacteria
Staphylococcus aureus
Streptococcus agalactiae
Streptococcus pneumoniae
Streptococcus pyogenes

Gram-Negative Bacteria
Haemophilus ducreyi
Haemophilus influenzae
Moraxella catarrhalis
Neisseria gonorrhoeae

Other Bacteria
Chlamydophila pneumoniae
Chlamydia trachomatis
Mycoplasma pneumoniae

The following *in vitro* data are available, but their clinical significance is unknown. At least 90 percent of the following bacteria exhibit an *in vitro* minimum inhibitory concentration (MIC) less than or equal to the susceptible breakpoint for azithromycin against isolates of similar genus or organism group. However, the efficacy of azithromycin in treating clinical infections caused by these bacteria has not been established in adequate and well-controlled clinical trials.

Gram-Positive Bacteria
Beta-hemolytic streptococci (Groups C, F, G)
Viridans group streptococci

Gram-Negative Bacteria
Bordetella pertussis
Legionella pneumophila

Anaerobic Bacteria
Prevotella bivia
Peptostreptococcus species

Other Bacteria
Ureaplasma urealyticum

Susceptibility Testing
For specific information regarding susceptibility test interpretive criteria and associated test methods and quality control standards recognized by FDA for this drug, please see: https://www.fda.gov/STIC.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Carcinogenesis
Long term studies in animals have not been performed to evaluate carcinogenic potential.

Mutagenesis
Azithromycin has shown no mutagenic potential in standard laboratory tests: mouse lymphoma assay, human lymphocyte clastogenic assay, and mouse bone marrow clastogenic assay.

Impairment of Fertility
In fertility studies conducted in male and female rats, oral administration of azithromycin for 64 to 66 days (males) or 15 days (females) prior to and during cohabitation resulted in decreased pregnancy rate at 20 and 30 mg/kg/day when both males and females were treated with azithromycin. This minimal effect on pregnancy rate (approximately 12% reduction compared to concurrent controls) did not become more pronounced when the dose was increased from 20 to 30 mg/kg/day (approximately 0.4 to 0.6 times the

adult daily dose of 500 mg based on body surface area) and it was not observed when only one animal in the mated pair was treated. There were no effects on any other reproductive parameters, and there were no effects on fertility at 10 mg/kg/day. The relevance of these findings to patients being treated with azithromycin at the doses and durations recommended in the prescribing information is uncertain.

13.2 Animal Toxicology and/or Pharmacology

Phospholipidosis (intracellular phospholipid accumulation) has been observed in some tissues of mice, rats, and dogs given multiple doses of azithromycin. It has been demonstrated in numerous organ systems (e.g., eye, dorsal root ganglia, liver, gallbladder, kidney, spleen, and/or pancreas) in dogs and rats treated with azithromycin at doses which, expressed on the basis of body surface area, are similar to or less than the highest recommended adult human dose. This effect has been shown to be reversible after cessation of azithromycin treatment. Based on the pharmacokinetic data, phospholipidosis has been seen in the rat (50 mg/kg/day dose) at the observed maximal plasma concentration of 1.3 mcg/mL (1.6 times the observed C_{max} of 0.821 mcg/mL at the adult dose of 2 g). Similarly, it has been shown in the dog (10 mg/kg/day dose) at the observed maximal serum concentration of 1 mcg/mL (1.2 times the observed C_{max} of 0.821 mcg/mL at the adult dose of 2 g). Phospholipidosis was also observed in neonatal rats dosed for 18 days at 30 mg/kg/day, which is less than the pediatric dose of 60 mg/kg based on the surface area. It was not observed in neonatal rats treated for 10 days at 40 mg/kg/day with mean maximal serum concentrations of 1.86 mcg/mL, approximately 1.5 times the C_{max} of 1.27 mcg/mL at the pediatric dose. Phospholipidosis has been observed in neonatal dogs (10 mg/kg/day) at maximum mean whole blood concentrations of 3.54 mcg/mL, approximately 3 times the pediatric dose C_{max}. The significance of these findings for animals and for humans is unknown.

14 CLINICAL STUDIES

Adult Patients

14.1 Acute Bacterial Exacerbations of Chronic Bronchitis in Adult Patients

In a randomized, double-blind controlled clinical trial of acute exacerbation of chronic bronchitis (AECB), azithromycin (500 mg once daily for 3 days) was compared with clarithromycin (500 mg twice daily for 10 days). The primary endpoint of this trial was the clinical cure rate at Days 21- 24. For the 304 patients analyzed in the modified intent-to-treat analysis at the Days 21-24 visit, the clinical cure rate for 3 days of azithromycin was 85% (125/147) compared to 82% (129/157) for 10 days of clarithromycin.

Clinical Cure Rates at Days 21-24 Bacteriologically Evaluable Patients by Pathogen:

Table 15. Clinical Cure Rates at Days 21-24 in Adult Patients with AECB by Pathogen

Pathogen	Azithromycin (3 Days)	Clarithromycin (10 Days)
S. pneumoniae	29/32 (91%)	21/27 (78%)
H. influenzae	12/14 (86%)	14/16 (88%)
M. catarrhalis	11/12 (92%)	12/15 (80%)

14.2 Acute Bacterial Sinusitis in Adult Patients

In a randomized, double-blind, double-dummy controlled clinical trial of acute bacterial sinusitis, azithromycin (500 mg once daily for 3 days) was compared with amoxicillin/clavulanate (500/125 mg three times a day for 10 days). Clinical response assessments were made at Day 10 and Day 28. The primary endpoint of this trial was prospectively defined as the clinical cure rate at Day 28. For the 594 patients analyzed in the modified intent to treat analysis at the Day 10 visit, the clinical cure rate for 3 days of azithromycin was 88% (268/303) compared to 85% (248/291) for 10 days of amoxicillin/clavulanate. For the 586 patients analyzed in the modified intent to treat analysis at the Day 28 visit, the clinical cure rate for 3 days of azithromycin was 71.5% (213/298) compared to 71.5% (206/288), with a 97.5% confidence interval of –8.4 to 8.3, for 10 days of amoxicillin/clavulanate.

In an open label, non-comparative study requiring baseline transantral sinus punctures, the following outcomes were the clinical success rates at the Day 7 and Day 28 visits for the modified intent to treat patients administered 500 mg of azithromycin once daily for 3 days with the following pathogens:

Table 16. Clinical Success Rates of Azithromycin (500 mg per day for 3 Days) on Days 7 and 10 in Adult Patients with Acute Bacterial Sinusitis by Pathogen

Pathogen	Day 7	Day 28
S. pneumoniae	23/26 (88%)	21/25 (84%)
H. influenzae	28/32 (87%)	24/32 (75%)
M. catarrhalis	14/15 (93%)	13/15 (87%)

Pediatric Patients

From the perspective of evaluating pediatric clinical trials, Days 11-14 were considered on-therapy evaluations because of the extended half-life of azithromycin. Days 11-14 data are provided for clinical guidance. Days 24-32 evaluations were considered the primary test of cure endpoint.

14.3 Pharyngitis/Tonsillitis in Pediatric Patients

In three double-blind controlled studies, conducted in the United States, azithromycin (12 mg/kg once a day for 5 days) was compared to penicillin V (250 mg three times a day for 10 days) in the treatment of pharyngitis due to documented Group A β-hemolytic *streptococci* (GABHS or *S. pyogenes*). Azithromycin was clinically and microbiologically statistically superior to penicillin at Day 14 and Day 30 with the following clinical success (i.e., cure and improvement) and bacteriologic efficacy rates (for the combined evaluable patient with documented GABHS):

Table 17. Summary of Three U.S. Studies of Azithromycin vs. Penicillin V and Clinical Success and Bacteriological Efficacy Rates at Days 14 and 30 in evaluable Pediatric Patients with Pharyngitis/Tonsilitis

	Day 14	Day 30
Bacteriologic Eradication:		
Azithromycin	323/340 (95%)	255/330 (77%)
Penicillin V	242/332 (73%)	206/325 (63%)
Clinical Success (cure plus improvement):		
Azithromycin	336/343 (98%)	310/330 (94%)
Penicillin V	284/338 (84%)	241/325 (74%)

Approximately 1% of azithromycin-susceptible *S. pyogenes* isolates were resistant to azithromycin following therapy.

14.4 Acute Otitis Media in Pediatric Patients

Efficacy using azithromycin given over 5 days (10 mg/kg on Day 1 followed by 5 mg/kg on Days 2-5).

Trial 1

In a double-blind, controlled clinical study of acute otitis media performed in the United States, azithromycin (10 mg/kg on Day 1 followed by 5 mg/kg on Days 2-5) was compared to amoxicillin/clavulanate potassium (4:1). For the 553 patients who were evaluated for clinical efficacy, the clinical success rate (i.e., cure plus improvement) at the Day 11 visit was 88% for azithromycin and 88% for the control agent. For the 521 patients who were evaluated at the Day 30 visit, the clinical success rate was 73% for azithromycin and 71% for the control agent.

Trial 2

In a non-comparative clinical and microbiologic trial performed in the United States, where significant rates of beta-lactamase producing organisms (35%) were found, 131 patients were evaluable for clinical efficacy. The combined clinical success rate (i.e., cure and improvement) at the Day 11 visit was 84% for azithromycin. For the 122 patients who were evaluated at the Day 30 visit, the clinical success rate was 70% for azithromycin.

Microbiologic determinations were made at the pre-treatment visit. Microbiology was not reassessed at later visits. The following clinical success rates were obtained from the evaluable group:

Table 18. Clinical Success Rates of Azithromycin on Days 11 and 30 in evaluable Pediatric Patients with Acute Otitis Media by Pathogen

	Day 11	Day 30
Pathogen	**Azithromycin**	**Azithromycin**
S. pneumoniae	61/74 (82%)	40/56 (71%)
H. influenzae	43/54 (80%)	30/47 (64%)
M. catarrhalis	28/35 (80%)	19/26 (73%)
S. pyogenes	11/11 (100%)	7/7 (100%)
Overall	177/217 (82%)	97/137 (73%)

Trial 3

In another controlled comparative clinical and microbiologic study of otitis media performed in the United States, azithromycin (10 mg/kg on Day 1 followed by 5 mg/kg on Days 2-5) was compared to amoxicillin/clavulanate potassium (4:1). This study utilized two of the same investigators as Protocol 2 (above), and these two investigators enrolled 90% of the patients in Protocol 3. For this reason, Protocol 3 was not considered to be an independent study. Significant rates of beta-lactamase producing organisms (20%) were found. Ninety-two (92) patients were evaluable for clinical and microbiologic efficacy. The combined clinical success rate (i.e., cure and improvement) of those patients with a baseline pathogen at the Day 11 visit was 88% for azithromycin vs. 100% for control; at the Day 30 visit, the clinical success rate was 82% for azithromycin vs. 80% for control.

Microbiologic determinations were made at the pre-treatment visit. Microbiology was not reassessed at later visits. At the Day 11 and Day 30 visits, the following clinical success rates were obtained from the evaluable group:

Table 19. Clinical Success Rates of Azithromycin vs Amoxycillin/Clavulanate Potassium (Control) on Days 11 and 30 in evaluable Pediatric Patients with Acute Otitis Media by Pathogen				
	Day 11		Day 30	
Pathogen	**Azithromycin**	**Control**	**Azithromycin**	**Control**
S. pneumoniae	25/29 (86%)	26/26 (100%)	22/28 (79%)	18/22 (82%)
H. influenzae	9/11 (82%)	9/9 (100%)	8/10 (80%)	6/8 (75%)
M. catarrhalis	7/7 (100%)	5/5 (100%)	5/5 (100%)	2/3 (66%)
S. pyogenes	2/2 (100%)	5/5 (100%)	2/2 (100%)	4/4 (100%)
Overall	43/49 (88%)	45/45 (100%)	37/45 (82%)	30/37 (81%)

Efficacy using azithromycin given over 3 days (10 mg/kg/day).

Trial 4
In a double-blind, controlled, randomized clinical study of acute otitis media in pediatric patients from 6 months to 12 years of age, azithromycin (10 mg/kg per day for 3 days) was compared to amoxicillin/clavulanate potassium (7:1) in divided doses q12h for 10 days. Each patient received active drug and placebo matched for the comparator.

For the 366 patients who were evaluated for clinical efficacy at the Day 12 visit, the clinical success rate (i.e., cure plus improvement) was 83% for azithromycin and 88% for the control agent. For the 362 patients who were evaluated at the Days 24-28 visit, the clinical success rate was 74% for azithromycin and 69% for the control agent.

Efficacy using azithromycin 30 mg/kg given as a single dose.

Trial 5
A double-blind, controlled, randomized trial was performed at nine clinical centers. Pediatric patients from 6 months to 12 years of age were randomized 1:1 to treatment of otitis media with either azithromycin (given at 30 mg/kg as a single dose on Day 1) or amoxicillin/clavulanate potassium (7:1), divided q12h for 10 days. Each child received active drug, and placebo matched for the comparator.

Clinical response (Cure, Improvement, Failure) was evaluated at End of Therapy (Days 12-16) and Test of Cure (Days 28-32). Safety was evaluated throughout the trial for all treated subjects. For the 321 subjects who were evaluated at End of Treatment, the clinical success rate (cure plus improvement) was 87% for azithromycin, and 88% for the comparator. For the 305 subjects who were evaluated at Test of Cure, the clinical success rate was 75% for both azithromycin and the comparator.

Trial 6
In a non-comparative clinical and microbiological trial, 248 patients from 6 months to 12 years of age with documented acute otitis media were dosed with a single oral dose of azithromycin (30 mg/kg on Day 1).

For the 240 patients who were evaluable for clinical modified Intent-to-Treat (MITT) analysis, the clinical success rate (i.e., cure plus improvement) at Day 10 was 89% and for the 242 patients evaluable at Days 24-28, the clinical success rate (cure) was 85%.

Table 20. Clinical Success Rates on Day 10 and on Days 24 to 28 in Pediatric Patients with Acute Otitis Media by Pathogen in the Modified Intent to Treat Population		
Presumed Bacteriologic Eradication		
	Day 10	**Days 24-28**
S. pneumoniae	70/76 (92%)	67/76 (88%)
H. influenzae	30/42 (71%)	28/44 (64%)
M. catarrhalis	10/10 (100%)	10/10 (100%)
Overall	110/128 (86%)	105/130 (81%)

16 HOW SUPPLIED/STORAGE AND HANDLING

ZITHROMAX Tablets

How Supplied
ZITHROMAX tablets (azithromycin tablets, USP) are supplied in the following strengths and package configurations:

Tablet strength	Tablet Color/Shape	Tablet Markings	Package Size	NDC Code
250 mg (containing azithromycin dihydrate equivalent to 250 mg of azithromycin)	Pink modified capsular shaped, engraved, film-coated	Engraved with "PFIZER" on one side and "306" on the other	Bottles of 30 Boxes of 3 (Z-PAKS® of 6) Unit Dose package of 50	NDC 0069-3060-30 NDC 0069-3060-75 NDC 0069-3060-86
		Engraved with "Pfizer" on one side and "ZTM 250" on the other	Bottles of 30 Boxes of 3 (Z-PAKS® of 6) Unit Dose package of 50	NDC 0069-4061-01 NDC 0069-4061-75 NDC 0069-4061-89
500 mg (containing azithromycin dihydrate equivalent to 500 mg of azithromycin)	Pink modified capsular shaped, engraved, film coated	Engraved with "Pfizer" on one side and "ZTM500" on the other	Bottles of 30 Boxes of 3 (TRI-PAKS™ of 3 tablets)	NDC 0069-3070-30 NDC 0069-3070-75

Storage and Handling
Store ZITHROMAX tablets between 15° to 30°C (59° to 86°F).

ZITHROMAX for Oral Suspension

How Supplied
ZITHROMAX for oral suspension (azithromycin for oral suspension, USP) after constitution contains a flavored suspension.
ZITHROMAX for oral suspension is supplied to provide 100 mg/5 mL or 200 mg/5 mL suspension in bottles as follows:

Azithromycin contents per bottle	NDC
300 mg	0069-3110-19
600 mg	0069-3120-19
900 mg	0069-3130-19
1200 mg	0069-3140-19

Constitution instructions are described for each bottle type elsewhere in the prescribing information *[see Dosage and Administration (2)]*.

Storage and Handling
Store dry powder below 30°C (86°F). Store constituted suspension between 5° to 30°C (41° to 86°F) and discard when full dosing is completed *[see Dosage and Administration (2)]*.

17 PATIENT COUNSELING INFORMATION

Advise the patient to read the FDA-approved patient labeling (Patient Information).

Important Administration Instructions
ZITHROMAX tablets and oral suspension can be taken with or without food.

Concomitant Administration with Aluminum and Magnesium Containing Antacids
Advise patients not to take aluminum and magnesium containing antacids and azithromycin simultaneously.

Allergic Reactions
Direct patients to discontinue azithromycin immediately and contact a physician if any signs of an allergic reaction occur *[see warnings and Precautions (5.1)]*.

Vomiting, Irritability, Diarrhea or Rash with Feeding in Infants

Direct parents or caregivers to contact their physician if vomiting, irritability, diarrhea or rash with feeding occurs in the infant *[see Warnings and Precautions (5.3) and Use in Specific Population (8.2)]*.

Antibacterial Resistance

Patients should be counseled that antibacterial drugs including ZITHROMAX should only be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When ZITHROMAX is prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of the 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 ZITHROMAX or other antibacterial drugs in the future.

Diarrhea

Diarrhea is a common problem caused by antibacterials, including ZITHROMAX which usually ends when the antibacterial is discontinued. Sometimes after starting treatment with antibacterials patients can develop watery and bloody stools (with or without stomach cramps and fever) even as late as two or more months after having taken the last dose of the antibacterial drug. If this occurs, patients should contact their physician as soon as possible *[see Warnings and Precautions (5.6)]*.

Licensed from Pliva

This product's labeling may have been updated. For the most recent prescribing information, please visit www.pfizer.com.



Distributed by
Pfizer Labs
Division of Pfizer Inc.
New York, NY 10001

LAB-0023-24.0

Patient Information
ZITHROMAX® (Zith-roe-maks)
(azithromycin)
tablets, for oral use
ZITHROMAX®
(azithromycin)
for oral suspension

Read this Patient Information leaflet before you start taking ZITHROMAX and each time you get a refill. There may be new information. This information does not take the place of talking to your healthcare provider about your medical condition or your treatment.

What is ZITHROMAX?

ZITHROMAX is a macrolide antibiotic prescription medicine used in adults 18 years of age or older to treat certain infections caused by certain germs called bacteria. These bacterial infections include:

- acute worsening of chronic bronchitis
- acute sinus infection
- community-acquired pneumonia
- infected throat or tonsils
- skin infections
- infections of the urethra or cervix
- genital ulcers in men

ZITHROMAX is used in children 6 months of age and older to treat:

- ear infections
- community-acquired pneumonia

ZITHROMAX is used in children 2 years of age and older to treat:

- infected throat or tonsils

ZITHROMAX is not recommended for use in people who cannot tolerate oral medicines because they are very ill or have certain other risk factors including:

- have cystic fibrosis
- have hospital acquired infections
- have known or suspected bacteria in the blood (bacterial infection in the blood)
- need to be in the hospital
- are elderly
- have any medical problems that can lower the ability of the immune system to fight infections

ZITHROMAX is not for viral infections such as the common cold.

It is not known if ZITHROMAX is safe and effective for genital ulcers in women.

It is not known if ZITHROMAX is safe and effective for ear infections, sinus infections and community-acquired pneumonia in children under 6 months of age.

It is not known if ZITHROMAX is safe and effective for infected throat or tonsils in children under 2 years of age.

Who should not take ZITHROMAX?

Do not take ZITHROMAX if you:

- have had a severe allergic reaction to certain antibiotics known as macrolides or ketolides including azithromycin and erythromycin.
- have a history of cholestatic jaundice or hepatic dysfunction that happened with the use of azithromycin.

What should I tell my healthcare provider before taking ZITHROMAX?

Before you take ZITHROMAX, tell your healthcare provider about all your medical conditions including if you:

- have pneumonia.
- have cystic fibrosis.
- have known or suspected bacteremia (bacterial infection in the blood).
- have liver or kidney problems.
- have heart problems, including a slow or irregular heartbeat, a heart problem called “QT prolongation”, or heart failure.
- have a problem that causes muscle weakness (myasthenia gravis).
- are pregnant or plan to become pregnant. It is not known if ZITHROMAX will harm your unborn baby.
- are breastfeeding or plan to breastfeed. ZITHROMAX can pass into breast milk. Talk to your healthcare provider about the best way to feed your baby while you take ZITHROMAX. Contact your healthcare provider immediately if you are breastfeeding a young child (less than 6 weeks of age) and he or she vomits, has diarrhea, develops a rash, or becomes irritable when fed.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.
ZITHROMAX and other medicines may affect each other causing side effects. ZITHROMAX may affect the way other medicines work, and other medicines may affect how ZITHROMAX works.
Especially tell your healthcare provider if you take:

- nelfinavir
- a blood thinner (warfarin)
- digoxin
- colchicine
- phenytoin
- an antacid that contains aluminum or magnesium

Know the medicines you take. Keep a list of your medicines and show it to your healthcare provider and pharmacist when you get a new medicine.

How should I take ZITHROMAX?

- Take ZITHROMAX exactly as your healthcare provider tells you to take it.
- ZITHROMAX can be taken with or without food.
- If you take ZITHROMAX oral suspension, shake the bottle well just before you take it.
- Do not skip any doses of ZITHROMAX or stop taking it, even if you begin to feel better, until you finish your prescribed treatment unless you have a serious allergic reaction, or your healthcare provider tells you to stop taking ZITHROMAX. **"See What are the possible side effects of ZITHROMAX?"** If you skip doses, or do not complete the total course of ZITHROMAX your treatment may not work as well and your infection may be harder to treat. Taking all of your ZITHROMAX doses will help lower the chance that the bacteria will become resistant to ZITHROMAX.
- If the bacteria becomes resistant to ZITHROMAX, ZITHROMAX and other antibiotic medicines may not work for you in the future.
- If you take too much ZITHROMAX, call your healthcare provider or get medical help right away.

What are the possible side effects of ZITHROMAX?
ZITHROMAX can cause serious side effects, including:

- **Serious allergic reactions.** Allergic reactions can happen in people taking azithromycin the active ingredient in ZITHROMAX, even after only 1 dose. Stop taking ZITHROMAX and get emergency medical help right away if you have any of the following symptoms of a severe allergic reaction:
  - trouble breathing or swallowing
  - swelling of the lips, tongue, face
  - throat tightness, hoarseness
  - rapid heartbeat
  - faintness
  - skin rash (hives)
  - new onset of fever and swollen lymph nodes

  Stop taking ZITHROMAX at the first sign of a skin rash and call your healthcare provider. Skin rash may be a sign of a more serious reaction to ZITHROMAX.
- **Liver damage (hepatotoxicity).** Hepatotoxicity can happen in people who take ZITHROMAX. Call your healthcare provider right away if you have unexplained symptoms such as:
  - nausea or vomiting
  - stomach pain
  - abdominal pain or tenderness
  - itching
  - unusual tiredness
  - loss of appetite
  - fever
  - weakness
  - change in the color of your bowel movements
  - dark colored urine
  - yellowing of your skin or the white part of your eyes

  Stop taking ZITHROMAX and tell your healthcare provider right away if you have yellowing of your skin or white part of your eyes, or if you have dark urine. These can be signs of a serious reaction to ZITHROMAX (a liver problem).
- **Serious heart rhythm changes that can be life-threatening, including heart stopping (cardiac arrest), QT prolongation, torsades de pointes, feeling that your heart is pounding or racing (palpitations), chest discomfort, or irregular heartbeat.**
  Tell your healthcare provider right away if you or your child feel a fast or irregular heartbeat, get dizzy or faint. ZITHROMAX may cause a rare heart problem known as prolongation of the QT interval. This condition can cause an abnormal heartbeat and can be very dangerous. The chances of this happening are higher in people:
  - who are elderly
  - with a family history of prolonged QT interval
  - with low blood potassium
  - who take certain medicines to control heart rhythm (antiarrhythmics)

- **Diarrhea.** Tell your healthcare provider right away if you have watery diarrhea, diarrhea that does not go away, or bloody stools. You may experience cramping and a fever. This could happen as late as 2 or more months after you have finished your treatment with ZITHROMAX.
- **Worsening of myasthenia gravis (a problem that causes muscle weakness).** Certain antibiotics like ZITHROMAX may cause worsening of myasthenia gravis symptoms, including muscle weakness and breathing problems. Call your healthcare provider right away if you have any worsening muscle weakness or breathing problems.

The most common side effects of ZITHROMAX include:

- nausea
- stomach pain
- vomiting

These are not all the possible side effects of ZITHROMAX. Tell your healthcare provider about any side effect that bothers you or that does not go away.
Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

How should I store ZITHROMAX?

- Store ZITHROMAX tablets between 59°F to 86°F (15°C to 30°C).
- Store ZITHROMAX oral suspension between 41°F to 86°F (5°C to 30°C).
- Keep ZITHROMAX oral suspension in a tightly closed container.
- Safely throw away any medicine that is out of date or no longer needed.

Keep ZITHROMAX and all medicines out of the reach of children.

General information about the safe and effective use of ZITHROMAX.
Medicines are sometimes prescribed for purposes other than those listed in the Patient Information leaflet. Do not use ZITHROMAX for a condition for which it was not prescribed. Do not give ZITHROMAX to other people, even if they have the same symptoms you have. It may harm them.
This Patient Information leaflet summarizes the most important information about ZITHROMAX. If you would like more information, talk with your healthcare provider. You can ask your pharmacist or healthcare provider for information about ZITHROMAX that is written for health professionals.

What are the ingredients in ZITHROMAX tablets and oral suspension?
ZITHROMAX tablets and oral suspension
Active ingredient: azithromycin dihydrate
ZITHROMAX tablets:
Inactive ingredients: D&C Red #30 aluminum lake, dibasic calcium phosphate anhydrous, hypromellose, lactose, magnesium stearate, pregelatinized starch, sodium croscarmellose, sodium lauryl sulfate, titanium dioxide, and triacetin.
ZITHROMAX oral suspension:
Inactive ingredients: FD&C Red #40, hydroxypropyl cellulose, sodium phosphate tribasic anhydrous, sucrose, xanthan gum, and spray dried artificial banana, cherry and creme de vanilla flavors.

Pfizer
Distributed by
Pfizer Labs
Division of Pfizer Inc.
New York, NY 10001
LAB-0372-8.0

This product's labeling may have been updated. For the most recent prescribing information, please visit www.pfizer.com
Revised 7/2026