Erythromycin

Antibiotic Class:
Macrolide

Antimicrobial Activity:
Gram-positive bacteria, *mycoplasma pneumoniae, chlamydia trachomatis, chlamydia pneumoniae, chlamydia psittaci, ureaplasma urealyticum, legionella pneumophila, campylobacter jejuni, bordatella pertussis*

Mechanism of Action:
Macrolides are inhibitors of protein synthesis. They impair the elongation cycle of the peptidyl chain by specifically binding to the 50 S subunit of the ribosome. Specificity towards prokaryotes relies upon the absence of 50S ribosomes in eukaryotes.

Pharmacodynamics:
Macrolides are considered time-dependent antibiotics, which means that their efficacy will be related to the time interval during which their concentration at the infected site remains above the MIC of the offending organism.

Pharmacokinetics: (500mg P.O. dose)
Cmax: 3mg/L; Half-life: 2 hours; Volume of distribution: 0.64L/kg; Bioavailability: 25-60%; Table 3

Adverse Effects:
Gastrointestinal: abdominal pain, nausea, vomiting, diarrhea
Cardiovascular System: prolongation of QT interval, ventricular fibrillation
Hepatic: hepatotoxicity
Otic: auditory and vestibular dysfunction
Hematologic: eosinophilia
Dermatologic: skin rashes, pain at injection site, thrombophlebitis

Dosage:
Capsule: 250mg
Topical gel: 2%
Granules for oral suspension: 200mg/5ml
Injection, powder for reconstitution: 500mg, 1g
Ophthalmic ointment: 2%
Topical ointment: 2%
Powder for oral suspension: 200mg/5ml, 400mg/5ml, 100mg/2.5ml
Topical solution: 1.5%, 2%
Oral suspension: 125mg/5ml, 250mg/5ml, 200mg/5ml, 400mg/5ml
Swab: 2%
Chewable tablet: 200mg
Delayed release tablet: 250mg, 333mg, 500mg
Film coated tablet: 250mg, 333mg, 400mg, 500mg

Susceptible infections: 250 mg PO every 6 hr or 500 mg PO every 12 hr; Max = 4 g/day
Susceptible infections: (delayed-release base) 250 mg PO every 6 hr or 333 mg PO every 8 hr or 500 mg PO every 12 hr; Max = 4 g/day
Amebiasis, intestinal: 250 mg PO every 6 hr or 500 mg PO every 12 hr for 10-14 days; (delayed-release base) 333 mg PO every 8 hr for 10-14 days

Chancroid: 500 mg PO 3 times a day for 7 days
Chlamydia: 500 mg PO 4 times a day for 7 days; (delayed-release base) two 333 mg tablets PO every 8 hr for 7 days
Intraocular infections: 1 cm ribbon ophthalmic ointment applied up to 6 times daily (depending on severity of infection)
Nongonococcal urethritis: 500 mg PO 4 times a day for at least 7 days; (delayed-release base) two 333 mg tablets PO every 8 hr for at least 7 days
Pelvic inflammatory disease (N. gonorrheae): 500 mg IV (lactobionate) every 6 hrs for 3 days, then 500 mg PO every 12 hr or 333 mg (delayed-release base) every 8 hr for 7 days
Rheumatic fever prophylaxis: 250 mg PO twice daily

Disease state based dosing:
Hepatic failure: drug may accumulate in patients with severe liver disease; no specific dosing recommendations available.

Contraindications/Warnings/Precautions:
Contraindications: concomitant therapy with astemizole, cisapride, pimozide, terfenadine

Precautions: concomitant therapy with lovastatin, history of myasthenia gravis (risk for exacerbation), impaired hepatic function

Drug Interactions:
Antipsychotics (major severity):
MOA: additive effects on QT prolongation
Management: Caution is advised if erythromycin and antipsychotics are used concomitantly. Monitor QT interval at baseline and periodically during treatment.
Arsenic Trioxide (major severity):
MOA: additive effects on QT prolongation
Management: Caution is advised if erythromycin and arsenic trioxide are used concomitantly. Monitor QT interval at baseline and periodically during treatment.
Astemizole (major severity):
MOA: additive effects on QT prolongation
Management: The concurrent administration of erythromycin and astemizole is contraindicated.
Atorvastatin (major severity):
MOA: inhibition by erythromycin of atorvastatin metabolism
Management: If concurrent therapy is required, monitor the patient for signs and symptoms of myopathy or rhabdomyolysis (muscle pain, tenderness, or weakness). Monitor creatine kinase (CK) levels and discontinue use if CK levels show a marked increase, or if myopathy or rhabdomyolysis is diagnosed or suspected.
Bepedril (major severity):
MOA: additive effects on QT prolongation
Management: The concurrent administration of erythromycin and bepedril is contraindicated.

Pregnancy: Category B: No evidence of risk in humans but studies inadequate.

Monitoring Requirements:
Therapeutic: Periodic WBC, chest X-ray if pneumonia, cultures, temperature
Toxicity: EKG, drug serum level

Brand names/Manufacturer: erythromycin/multiple manufacturers