Ophthalmologic Drug Guide

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To my lovely wife Tina, for your continual patience and encouragement.
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Douglas J. Rhee

To my daughters, Amelia and Lillian, who fill my life with joy.

Kathryn A. Colby

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Christopher J. Rapuano

To my husband and my parents.

Lucia Sobrin

Preface

This pocket reference is designed to assist the eye care professional by providing current information on the ever-increasing number of ocular pharmacotherapeutics. Many different classes of medications are listed, oftentimes with pertinent facts. This book presents the usual recommended dose for the medications listed. Clinical judgment should always be used, as all therapy should be tailored to the individual patient. The intent of this manual is to provide therapeutic suggestions once the diagnosis is known. We recommend its use in conjunction with an ophthalmologic reference text, such as the *Massachusetts Eye & Ear Infirmary Illustrated Manual of Ophthalmology* (Saunders) or the *The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease* (Lippincott Williams & Wilkins). A more complete listing of all mechanisms, side effects, and drug interactions can be found in the product insert, the *Physicians' Desk Reference*, and the *Physicians' Desk Reference for Ophthalmology*, and these should be consulted.

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Abbreviations

Abbreviation	Meaning
Dosing	
Q*x*	Every *x* hours
QOD	Every other day
QD	Once per day
BID	Twice per day
TID	Three times per day
QID	Four times per day
IV	Intravenous Administration
PO	Take by mouth
Weights and Measures	
mg	Milligram
gm	Gram
kg	Kilogram
m^2	Meters mathematically squared (refers to body surface area)
ml	Milliliter
U	International unit
Formulation	
Soln	Solution
Susp	Suspension
Oint	Ointment
Tab	Tablet

1. Antibacterial Agents

A. TOPICAL ANTIBIOTICS[1]

Drug	Trade	Preparation	Dose	Notes
bacitracin	N/A	Soln, 10,000 U/ml	Q1hr	Fortified[2]
	AK-Tracin	Oint, 500 U/gm	QD-QID	BC
cefazolin	Ancef	Soln, 5%	Q1 hr	Fortified[2]
chloramphenicol	Chloromycetin, Chloroptic, Ocu-Chlor	Soln, 0.5%	Q3–6 hr	BS, except BC against *H. influenzae, N meningitidis, N. gonorrhea, C. trachomatis.* Has been reported to be associated with aplastic anemia.
	Chloromycetin, Chloroptic, Ocu-Chlor	Oint, 1%	QHS-Q3 hr	
ciprofloxacin	Ciloxan	Soln, 0.3%	QID-Q1/2 hr	Fluoroquinolone-BC; active against *P. Aeruginosa* and *Neisseria* species
		Oint, 0.3%	QHS-QID	
erythromycin	AK-mycin, Ilotycin	Oint, 0.5%	QD-QID	BS; active against *N. gonorrhea* and *C. trachomatis*
gatifloxacin	Zymar	Soln, 0.3%	QID-Q1 hr	Fluoroquinolone-BC
gentamicin	Garamycin, Genoptic, Gentacidin, Gentak, Ocu-mycin	Soln, 0.3%	Q1–6 hr	Aminoglycoside-BC; active against *P. Aeruginosa* and *N. gonorrhea*
	Garamycin, Genoptic, Gentacidin, Gentak, Ocu-mycin	Oint, 0.3%	QD-TID	
	N/A	Soln, 1.5%	Q1 hr	Fortified[2]

levofloxacin	Quixin	Soln, 0.5%	QID-Q1/2 hr	Fluoroquinolone-BC; active against *P. Aeruginosa* and Neisseria species
metronidazole	MetroGel	Gel, 0.75%	BID	Periocular use for rosacea **Not for use in the eye**
moxifloxacin	Vigamox	Soln, 0.5%	TID-Q1 hr	Fluoroquinolone-BC; self-preserved; pH 6.8
neomycin	only available in combination medications (see below)			
norfloxacin	Chibroxin	Soln, 0.3%	QID-Q1 hr	Fluoroquinolone-BC
ofloxacin	Ocuflox	Soln, 0.3%	QID-Q1 hr	Fluoroquinolone-BC ; active against *P. Aeruginosa* and *Neisseria* species;
oxytetracycline/ polymyxin B	AK-tetra, Terramycin, Terak	Oint, 0.5%/10,000 U	QD-QID	BC
polymyxin B/ bacitracin	AK-poly-bac, Polysporin, Polytracin	Oint, 10,000 U/ml/ 500 U/ml	QD-QID	BC
polymyxin B/ neomycin	AK-trol, Statrol	Soln, 16,250 U/ml/ 0.35%	QID	BC
	AK-trol, Statrol	Oint, 10,000 U/ml/ 0.35%	QD-QID	
polymyxin B /neomycin/ bacitracin	Neotal	Oint, 5,000 U/ml/ 0.5%/400 U/ml	QD- QID	BC
	AK-spore, Neosporin, Ocu-spor B	Oint, 10,000 U/ml/ 0.35%/400 U	QD-QID	

(*continued*)

A. TOPICAL ANTIBIOTICS (*continued*)

Drug	Trade	Preparation	Dose	Notes
polymyxin B/ neomycin/ gramicidin	AK-Spore, Neosporin, Ocu-spor G, Polymycin	Soln, 10,000 U/ml/ 0.35%/0.025%	QID	BC, gramicidin makes cell membrane more permeable
polymyxin B/ trimethoprim	Polytrim	Soln, 10,000 U/ml/ 0.1%	QID	BC
sulfacetamide	AK-sulf, Bleph-10, Ophthacet, Ocusulf, Sulf-10	Soln, 10%	QID-Q1 hr	BS
	AK-sulf	Oint, 10%	QD-QID	
sulfacetamide/ phenylephrine	Vasosulf	Soln, 15%/0.125%	QD-QID	BS; antibiotic with an alpha agonist
sulfisoxazole	Gantrisin	Soln, 4%	QID-Q1 hr	BS
	Gantrisin	Oint, 4%	QD-QID	
tetracycline	Achromycin	Soln, 1%	QID-Q1/2 hr	BS
tobramycin	AKTOB, Defy, Tobrex	Soln, 0.3%	QID-Q1 hr	Aminoglycoside, BC; active against *P. Aeruginosa* and *N. gonorrhea*
	AKTOB, Defy, Tobrex	Oint, 0.3%	QD-TID	
		Soln, 1.5%	Q1 hr	Fortified[2]
vancomycin		Soln, 5%	Q1 hr	BS, fortified[2] **not** for Gram negative coverage; reserve use for PCN-allergic patients and resistant organisms

[1] For antibiotic spectrum of topical agents, refer to Appendix 1.
[2] Fortified medications not commercially available; refer to Appendix 2 for preparation instructions.
BC = bacteriocidal; BS = bacteriostatic; N/A = not available.

B. ORAL ANTIBIOTICS

Drug	Trade	Dose	Notes
amoxicillin	Amoxil, Polymox	250–500 mg PO TID	Adult dose
		25–50 mg/kg/day PO in 3 divided doses	Pediatric dose
amoxicillin/clavulanate	Augmentin	250–500 mg PO TID or 875 mg PO BID	Adult dose
		20–40 mg/kg/day PO in 3 divided doses	Pediatric dose
azithromycin	Zithromax	500 mg PO day 1, then 250 mg QD × 4 days	Adult dose
		20 mg/kg × 1 (pediatric dose) 1000 mg PO × 1 (adult dose)	Dose for *Chlamydia* conjunctivitis[1]
		5–12 mg/kg/day PO in one dose for 5 days	Pediatric dose
cephalexin	Keflex	250–500 mg PO QID	Adult dose
		25–50 mg/kg/day PO in 4 divided doses	Pediatric dose
cefuroxime axetil	Ceftin	250–500 mg PO BID	Adult dose
		20–30 mg/kg/day PO divided BID	Pediatric dose
ciprofloxacin	Cipro	250–750 mg PO BID	Not for children or pregnancy Do not take with antacids; must modify dosage in renal failure
	Cipro XE	500 mg PO QD	Extended release formula
clarithromycin	Biaxin	250–500 mg PO BID	Adult dose
		15 mg/kg/day PO divided BID	Pediatric dose

(*continued*)

B. ORAL ANTIBIOTICS (*continued*)

Drug	Trade	Dose	Notes
doxycycline	Vibramycin	100 mg BID	Can be used for ocular rosacea Not for children or pregnancy
erythromycin	E-mycin	250–500 mg PO QID 30–50 mg/kg/day in 3–4 divided doses	Adult dose Pediatric dose
gatifloxacin	Avelox	400 mg PO QD	Not for children or pregnancy
levofloxacin	Levaquin	500 mg PO QD	Not for children or pregnancy; must modify dosage in renal failure
minocycline	Minocin	100–200 mg PO BID	Not for children or pregnancy
ofloxacin	Floxin	200–400 mg PO BID	Not for children or pregnancy; must modify dosage in renal failure
	Achromycin	250–500 mg PO QID	Can be used for ocular rosacea Not for children or pregnancy Do not take with food, milk products, or antacids

[1] From *Arch Ophthalmol* 1998;116:1625–1628; *Ophthalmology* 1998;105:658–661.

C. ANTIBIOTICS FOR SUBCONJUNCTIVAL/INTRAVITREAL INJECTION

	Subconjunctival injection[1]	Intravitreal injection[2]	Notes
(1) Aminoglycosides[3]			
amikacin	25 mg	0.2–0.4 mg	
gentamicin	10–20 mg	0.2–0.4 mg	
kanamycin	30 mg	N/A	
neomycin	125–250 mg	N/A	Rarely used
tobramycin	10–20 mg	0.1–0.4 mg	
(2) Penicillins			
ampicillin	50–150 mg	0.5 mg	Rarely used
carbenicillin	100 mg	0.25–2.0 mg	
methicillin	50–100 mg	1.0–2.0 mg	
penicillin G	0.5–1.0 million units	N/A	
ticarcillin	100 mg	N/A	
(3) Cephalosporins			
cefazolin	100 mg	2.0–2.25 mg	First generation, rarely used
ceftazidime	200 mg	2.25 mg	Third generation

(*continued*)

C. ANTIBIOTICS FOR SUBCONJUNCTIVAL/INTRAVITREAL INJECTION (*continued*)

	Subconjunctival injection[1]	Intravitreal injection[2]	Notes
(4) Others			
bacitracin	5,000 U	N/A	
chloramphenicol	N/A	1.0 mg	Rarely used
clindamycin	15–50 mg	1.0 mg	
erythromycin	100 mg	0.5 mg	almost never used
polymyxin B sulfate	100,000 U	N/A	almost never used
vancomycin	25 mg	1.0 mg	

[1] Subconjunctival dose should be in a volume of 0.5 ml.
[2] Intravitreal dose should be in a volume of 0.1 ml.
[3] All intravitreal injections of aminoglycosides have potential for macular necrosis.
N/A = not available

D. REGIMENS FOR SPECIFIC ORGANISMS

(1) Syphilis[1,2]

Note: Both patient and sexual partners must be evaluated for other sexually transmitted diseases, including HIV.