THE APRN’S COMPLETE GUIDE TO

PRESCRIBING DRUG THERAPY

2017

Includes free e-book and electronic updates

MARI J. WIRFS

SPRINGER PUBLISHING COMPANY
The APRN’s Complete Guide to Prescribing Drug Therapy

2017
Mari J. Wirfs, PhD, MN, RN, ANP-BC, FNP-BC, CNE, is a nationally certified adult nurse practitioner (ANCC since 1997) and family nurse practitioner (AANP since 1998) and certified nurse educator (NLN since 2008). Her career spans 45 years in collegiate undergraduate and graduate nursing education and clinical practice in critical care, pediatrics, psychiatric–mental health nursing, and advanced practice primary care nursing. Her PhD is in higher education administration and leadership. During her academic career, she has achieved the rank of professor with tenure in two university systems. Currently she is adjunct professor in the New Orleans Baptist Theological Seminary Graduate School where she teaches neuropsychology and psychopharmacology in the Guidance and Counseling Program. She is a frequent guest lecturer on a variety of advanced practice topics to professional groups and general health care topics to community groups.

Dr. Wirfs has completed, published, and presented six quantitative research studies focusing on academic leadership, nursing education, and clinical practice issues, including one for the Army Medical Department conducted during her 8 years reserve service in the Army Nurse Corps. Dr. Wirfs has co-authored family primary care certification review books and study materials, authored the Clinical Guide to Pharmacotherapeutics for the Primary Care Provider (1999–2014), and now The APRN’s Complete Guide to Prescribing Drug Therapy 2017.

Dr. Wirfs has been inducted into several honor societies and is a long-time member of the National Organization for Nurse Practitioner Faculties (NONPF), serving as clinical preceptor for several nurse practitioner programs. Since 2002, Dr. Wirfs has served as clinical director and primary care provider at the NOBTS Family Health Care Clinic, serving faculty, staff, students, and their families. She is also a founding member of the medical staff in part-time practice at Baptist Community Health Services, established post-Katrina in the New Orleans Lower Ninth Ward.
The APRN’s Complete Guide to Prescribing Drug Therapy

2017

Mari J. Wirfs, PhD, MN, RN, ANP-BC, FNP-BC, CNE
CONTENTS

Reviewers  xxii
Abbreviations  xxiii
Preface  xxxi
Acknowledgments  xxxiii

SECTION I: DRUG THERAPY BY CLINICAL DIAGNOSIS

ACE Inhibitors (ACEIs)  203
ACEI/CCB Combinations  212
ACEI/Diuretic Combinations  209
Acetaminophen Overdose  3
Acne Rosacea  3
Acne Vulgaris  4
Acromegaly  8
Actinic Keratosis  8
Alcohol Dependence/Alcohol Withdrawal Syndrome  9
Aldosterone Receptor Blocker  208
Allergic Reaction: General  10
Allergic Sinusitis  372
Alpha-1 Antagonists  207
Alpha-1 Antagonist/Diuretic Combinations  212
Alzheimer’s Disease  11
Amebic Dysentery (see Amebiasis)  12
Amebiasis  12
Amebic Liver Abscess  13
Amenorrhea: Secondary  14
Anaphylaxis  14
Anemia of Chronic Kidney Disease (CKD) and Chronic Renal Failure (CRF)  15
Anemia: Folic Acid Deficiency  16
Anemia: Iron Deficiency  16
Anemia: Megaloblastic/Anemia: Pernicious  16
Angina Pectoris: Stable  17
Angiotensin Converting Enzyme Inhibitors (ACEIs)  203
Angiotensin II Receptor Blockers (ARBs)  204
Ankylosing Spondylitis (see Osteoarthritis)  281
Anorexia/Cachexia  20
Anthrax (Bacillus anthracis)  20
Antihypertension/Antilipid Combinations  215
Antilipid/Antihypertension Combinations  215
Anxiety Disorder: Generalized (GAD)/Anxiety Disorder: Social (SAD)  22
<table>
<thead>
<tr>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphthous Stomatitis (Mouth Ulcer, Canker Sore)</td>
</tr>
<tr>
<td>ARB/CCB Combinations</td>
</tr>
<tr>
<td>ARB/CCB/HCTZ Combinations</td>
</tr>
<tr>
<td>ARB/Diuretic Combinations</td>
</tr>
<tr>
<td>Arterial Insufficiency (Peripheral Vascular Disease, PVD) Arthritis (see Gouty Arthritis)</td>
</tr>
<tr>
<td>Aspergillosis (Scedosporium apiospermum, Fusarium spp.)</td>
</tr>
<tr>
<td>Asthma</td>
</tr>
<tr>
<td>Atrophic Vaginitis</td>
</tr>
<tr>
<td>Attention Deficit Disorder (ADD)/Attention Deficit Hyperactivity Disorder (ADHD)</td>
</tr>
<tr>
<td>Bacterial Endocarditis: Prophylaxis</td>
</tr>
<tr>
<td>Bacterial Vaginosis (BV; Gardnerella vaginalis)</td>
</tr>
<tr>
<td>Baldness: Male Pattern</td>
</tr>
<tr>
<td>Bartonella Infection (Cat Scratch Fever)</td>
</tr>
<tr>
<td>Basal Cell Carcinoma: Superficial (see Actinic Keratosis)</td>
</tr>
<tr>
<td>Bell's Palsy</td>
</tr>
<tr>
<td>Benign Essential Tremor</td>
</tr>
<tr>
<td>Benign Prostatic Hyperplasia (BPH)</td>
</tr>
<tr>
<td>Beta-Blockers: Cardiodeselective</td>
</tr>
<tr>
<td>Beta-Blockers: Noncardiodeselective</td>
</tr>
<tr>
<td>Beta-Blocker: (Noncardiodeselective)/Alpha-1 Blocker Combinations</td>
</tr>
<tr>
<td>Beta-Blocker: (Noncardiodeselective)/Diuretic Combinations</td>
</tr>
<tr>
<td>Bile Acid Deficiency</td>
</tr>
<tr>
<td>Binge Eating Disorder</td>
</tr>
<tr>
<td>Bipolar I Disorder: Depression</td>
</tr>
<tr>
<td>Bipolar I Disorder: Mania</td>
</tr>
<tr>
<td>Bite: Cat</td>
</tr>
<tr>
<td>Bite: Dog</td>
</tr>
<tr>
<td>Bite: Human</td>
</tr>
<tr>
<td>Blepharitis</td>
</tr>
<tr>
<td>Blepharoconjunctivitis: Bacterial</td>
</tr>
<tr>
<td>Bloating (see Flatulence)</td>
</tr>
<tr>
<td>Boil (see Skin Infection: Bacterial)</td>
</tr>
<tr>
<td>Bordetella pertussis</td>
</tr>
<tr>
<td>Breast Abscess (see Mastitis)</td>
</tr>
<tr>
<td>Breast Cancer: Prophylaxis</td>
</tr>
<tr>
<td>Bronchiolitis</td>
</tr>
<tr>
<td>Bronchitis: Acute Acute Exacerbation of Chronic Bronchitis (AECB)</td>
</tr>
<tr>
<td>Bronchitis: Chronic Chronic Obstructive Pulmonary Disease (COPD)</td>
</tr>
<tr>
<td>Bulimia Nervosa</td>
</tr>
<tr>
<td>Burn: Minor</td>
</tr>
<tr>
<td>Bursitis</td>
</tr>
<tr>
<td>Calcium Channel Blockers (CCBs): Benzothiazepines</td>
</tr>
</tbody>
</table>
### Contents

- Calcium Channel Blockers (CCBs): Dihydropyridines 206
- Calcium Channel Blockers (CCBs): Diphenylalkylamines 207
- Cachexia 20
- Calcium Deficiency (Hypocalcemia) 218
- Calloused Skin 387
- Candidiasis: Oral (Thrush) 66
- Candidiasis: Skin 67
- Candidiasis: Vulvovaginal (Moniliasis) 68
- Canker Sore *(see* Aphthous Stomatitis) 26
- Carbuncle *(see* Skin Infection: Bacterial) 387
- Carpal Tunnel Syndrome (CTS) 71
- Cat Scratch Fever (*Bartonella* Infection) 71
- CCB/ACEI Combinations 212
- CCBs: Benzothiazepines 205
- CCBs: Dihydropyridines 206
- CCBs: Diphenylalkylamines 207
- CCB/Statin Combinations 215
- Cellulitis 72
- Central Alpha-Agonists 207
- Central Alpha-Agonist/Diuretic Combinations 211
- Cerumen Impaction 76
- Chalazion *(see* Stye) 394
- Chancroid 76
- Chest Wall Syndrome (Costochondritis) 98
- Chickenpox (Varicella) 77
- Chlamydia Trachomatis 78
- Cholelithiasis 80
- Cholera (*Vibrio cholerae*) 81
- Chloasma *(see* Hyperpigmentation) 198
- Chronic Obstructive Pulmonary Disease (COPD) 63
- Cluster Headache 167
- Colic: Infantile 83
- Colitis 355
- Common Cold (Viral Upper Respiratory Infection [URI]) 84
- Community Acquired Pneumonia (CAP) 330
- Condyloma Acuminata 449
- Conjunctivitis: Allergic 85
- Conjunctivitis/Blepharoconjunctivitis: Bacterial 89
- Conjunctivitis: Chlamydial 93
- Conjunctivitis: Fungal 94
- Conjunctivitis: Gonococcal 94
- Conjunctivitis: Viral 95
- Constipation 95
- COPD *(see* Bronchitis: Chronic) 63
Contents

Corneal Edema 98
Corneal Ulceration 98
Costochondritis (Chest Wall Syndrome) 98
Cramps: Abdominal, Intestinal 98
Crohn's Disease 99
Cradle Cap (see Dermatitis: Seborrheic) 113
Cryptosporidium parvum 102
Cutaneous Larvae Migrans (Hookworm) 191
Cystic Fibrosis 103
Cystitis (Urinary Tract Infection, UTI) 439
Cytomegalovirus Retinitis 367
Dandruff (see Dermatitis: Seborrheic) 113
Decubitus Ulcer 434
Deep Vein Thrombosis (DVT) 103
Dehydration 103
Dementia 103
Dental Abscess 104
Dental Procedure Prophylaxis (see Bacterial Endocarditis: Prophylaxis) 41
Denture Irritation 105
Depression, Major Depressive Disorder (MDD) 105
Dermatitis: Atopic (Eczema) 110
Dermatitis: Contact 112
Dermatitis: Diaper (see Diaper Rash) 117
Dermatitis: Seborrheic 113
Diabetes Mellitus, Type 1 417
Diabetes Mellitus, Type 2 421
Diabetic Peripheral Neuropathy 115
Diaper Rash 117
Diarrhea: Acute 118
Diarrhea: Chronic 120
Diarrhea: Travelers 122
Digitalis Toxicity 122
Direct Renin Inhibitor 208
Diuretics: Thiazide 201
Diuretics: Potassium-Sparing 202
Diuretics: Loop 202
Diuretics: Other 203
Diuretics: Combination 203
Diphtheria 123
Diverticulitis 123
Diverticulosis 124
Donovanosis (see Granuloma Inguinale) 164
DRI/ARB Combinations 213
DRI/CCB Combinations 213
DRI/HCTZ Combinations  213
DRI/CCB/HCTZ Combinations  214
Dry Eye Syndrome  125
Dry Mouth Syndrome  386
Dysentery (see Amebiasis)  12
Dyshidrosis  126
Dyshydrotic Eczema (Dyshidrosis, Pompholyx)  126
Dysfunctional Uterine Bleeding (DUB)  126
Dyslipidemia (Hypercholesterolemia, Hyperlipidemia, Mixed Dyslipidemia)  126
Dysmenorrhea: Primary  131
Dyspareunia (Postmenopausal Painful Intercourse)  132
Eating Disorder, Binge  46
Eczema (Atopic Dermatitis)  110
Edema  132
Emphysema  134
Encopresis  137
Endometriosis  137
Enteritis  351
Enterobius vermicularis (see Pinworm Infection)  327
Enuresis: Primary, Nocturnal  138
Epicondylitis  139
Epididymitis  139
Erectile Dysfunction (ED)  140
Erosive Esophagitis  142
Erysipelas  141
Erythema Chronicum Migrans (Lyme Disease)  246
Erythema Infectiosum  148
Esophagitis, Erosive  142
Exanthem Subitum (see Roseola)  377
Eye Pain  142
Facial Hair, Excessive/Unwanted  143
Fecal Odor  143
Fever (Pyrexia)  143
Fever Blister  188
Fibrocystic Breast Disease  146
Fibromyalgia  146
Fifth Disease (Erythema Infectiosum)  148
Flatulence  148
Flu  230
Fluoridation, Water, <0.6 ppm  148
Folliculitis  149
Folliculitis Barbae  149
Foreign Body: Esophagus  150
<table>
<thead>
<tr>
<th>Condition</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Body: Eye</td>
<td>150</td>
</tr>
<tr>
<td>Furuncle</td>
<td>387</td>
</tr>
<tr>
<td>Fusarium spp.</td>
<td>27</td>
</tr>
<tr>
<td>Gardnerella Vaginalis (Bacterial Vaginosis)</td>
<td>43</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder (GAD)</td>
<td>22</td>
</tr>
<tr>
<td>Genital Herpes (Herpes Genitalis, HSV Type II)</td>
<td>186</td>
</tr>
<tr>
<td>Genital Warts</td>
<td>449</td>
</tr>
<tr>
<td>German Measles (Rubella)</td>
<td>379</td>
</tr>
<tr>
<td>Gastritis</td>
<td>150</td>
</tr>
<tr>
<td>Gastroesophageal Reflux Disease (GERD)</td>
<td>150</td>
</tr>
<tr>
<td>Giardiasis (Giardia Lamblia)</td>
<td>155</td>
</tr>
<tr>
<td>Gingivitis/Periodontitis</td>
<td>155</td>
</tr>
<tr>
<td>Glaucoma: Open Angle</td>
<td>155</td>
</tr>
<tr>
<td>Golfer's Elbow (see Epicondylitis)</td>
<td>139</td>
</tr>
<tr>
<td>Gonorrhea (Neisseria gonorrhoeae)</td>
<td>158</td>
</tr>
<tr>
<td>Gout</td>
<td>161</td>
</tr>
<tr>
<td>Gouty Arthritis</td>
<td>163</td>
</tr>
<tr>
<td>Granuloma Inguinale (Donovanosis)</td>
<td>164</td>
</tr>
<tr>
<td>Growth Failure</td>
<td>166</td>
</tr>
<tr>
<td>Hair Loss (see Baldness: Male Pattern)</td>
<td>44</td>
</tr>
<tr>
<td>Headache: Migraine/Cluster</td>
<td>167</td>
</tr>
<tr>
<td>Headache: Tension (Muscle Contraction Headache)</td>
<td>172</td>
</tr>
<tr>
<td>Heartburn (see GERD)</td>
<td>150</td>
</tr>
<tr>
<td>Heart Failure (HF)</td>
<td>174</td>
</tr>
<tr>
<td>Helicobacter pylori (H. pylori) Infection</td>
<td>179</td>
</tr>
<tr>
<td>Hemorrhoids</td>
<td>180</td>
</tr>
<tr>
<td>Hepatitis A (HAV)</td>
<td>181</td>
</tr>
<tr>
<td>Hepatitis B (HBV)</td>
<td>181</td>
</tr>
<tr>
<td>Hepatitis C (HCV)</td>
<td>183</td>
</tr>
<tr>
<td>Herpangina</td>
<td>185</td>
</tr>
<tr>
<td>Herpes Genitalis (HSV Type II)</td>
<td>186</td>
</tr>
<tr>
<td>Herpes Labialis/Herpes Facialis (Herpes Simplex Virus Type I, Cold Sore, Fever Blister)</td>
<td>188</td>
</tr>
<tr>
<td>Herpes Simplex Type I</td>
<td>188</td>
</tr>
<tr>
<td>Herpes Simplex Type II</td>
<td>186</td>
</tr>
<tr>
<td>Herpes Zoster (Shingles)</td>
<td>189</td>
</tr>
<tr>
<td>Hiccups: Intractable</td>
<td>190</td>
</tr>
<tr>
<td>Hidradenitis Suppurativa</td>
<td>190</td>
</tr>
<tr>
<td>Hives (Urticaria)</td>
<td>447</td>
</tr>
<tr>
<td>Hookworm (Uncinariasis, Cutaneous Larvae Migrans)</td>
<td>191</td>
</tr>
<tr>
<td>Hordeolum (see Stye)</td>
<td>394</td>
</tr>
<tr>
<td>Human Immunodeficiency Virus (HIV) Exposure, Antiretroviral PEP/nPEP</td>
<td>192</td>
</tr>
<tr>
<td>Human Papillomavirus (HPV)</td>
<td>196</td>
</tr>
</tbody>
</table>
Hypercholesterolemia  126
Hyperhidrosis (Perspiration, Excessive)  196
Hyperhomocysteinemia  197
Hyperkalemia (Potassium Excess)  197
Hyperparathyroidism  198
Hyperlipidemia  126
Hyperphosphatemia  198
Hyperpigmentation  198
Hyperprolactinemia  199
Hypertension: Primary, Essential  200
Hyperthyroidism  215
Hypertriglyceridemia  216
Hypoactive Sexual Desire Disorder (HSDD, Low Libido)  246
Hypocalcemia (Calcium Deficiency)  218
Hypokalemia (Potassium Deficiency)  220
Hypomagnesemia (Magnesium Deficiency)  221
Hypoparathyroidism (Parathyroid Hormone Deficiency)  221
Hypocalcemia  218
Hypokalemia  220
Hypomagnesemia  221
Hypopnea Syndrome (see Sleep Apnea)  391
Hypoparathyroidism  221
Hypophosphatasia (Osteomalacia, Rickets)  222
Hypotension: Neurogenic, Orthostatic  222
Hypotestosteronemia  396
Hypothyroidism (Thyroid Hormone Deficiency)  223
Idiopathic Pulmonary Fibrosis (IPF)  224
Impetigo Contagiosa (Indian Fire)  224
Impotence (Erectile Dysfunction, ED)  140
Incontinence: Fecal  227
Incontinence: Urinary  227
Incontinence: Urinary Overactive Bladder/Stress
  Incontinence/Urge Incontinence  227
Indian Fire (Impetigo Contagiosa)  224
Infectious Mononucleosis  259
Influenza (Flu)  230
Insect Bite/Sting  232
Insomnia  233
Insulins  417
Intermittent Claudication (Peripheral Artery Disease, PAD)  321
Interstitial Cystitis  235
Intertrigo  237
Iritis: Acute  237
Iron Overload  238
Contents

Irritable Bowel Syndrome With Constipation (IBS-C) 238
Irritable Bowel Syndrome With Diarrhea (IBS-D) 239
Juvenile Rheumatoid Arthritis (JRA) 241
Keratitis/Keratoconjunctivitis: Herpes Simplex 242
Keratitis/Keratoconjunctivitis: Vernal 242
Labyrinthitis 243
Lactose Intolerance 243
Larva Migrans: Cutaneous/Visceral 243
Lead Encephalopathy (Lead Poisoning, Lead Toxicity) 244
Lead Poisoning 244
Lead Toxicity (Lead Poisoning, Lead Encephalopathy) 244
Leg Cramps: Nocturnal, Recumbency 244
Lentigines: Benign, Senile 244
Low Libido, Hypoactive Sexual Desire Disorder (HSDD) 246
Lice (see Pediculosis) 315
Listeriosis 245
Low Back Strain 245
Lyme Disease (Erythema Chronicum Migrans) 246
Lymphadenitis 247
Lymphogranuloma Venereum 248
Magnesium Deficiency (Hypomagnesemia) 221
Major Depressive Disorder (MDD) 105
Malaria (Plasmodium falciparum, Plasmodium vivax Malaria) 249
Mastitis (Breast Abscess) 251
Measles (Rubeola) 379
Megaloblastic Anemia (Vitamin B-12 Deficiency) 16
Melanasia (Hyperpigmentation) 198
Melasma 252
Meniere's Disease 252
Meningitis (Neisseria meningitidis) 253
Menopause 254
Menometorrhagia: Irregular Heavy Menstrual Bleeding/Menorrhagia: Heavy Cyclical Menstrual Bleeding 258
Migraine Headache 167
Mitrval Valve Prolapse 259
Moniliasis (Candidiasis: Vulvovaginal) 68
Mononucleosis (Mono) 259
Motion Sickness 259
Mouth Ulcer (Aphthous Stomatitis) 26
Multiple Sclerosis (MS) 260
Mumps (Infectious Parotitis) 262
Muscle Contraction Headache (Headache: Tension) 172
Muscle Strain 262
Mycoplasma Pneumonia 338
Contents

Narcolepsy 266
Narcotic Dependence (Opioid Dependence) 278
Nausea/Vomiting 269
Nerve Agent Poisoning 272
Neurogenic, Orthostatic Hypotension 222
Nicotine Withdrawal Syndrome (see Tobacco Dependence) 407
Nocturnal Enuresis (Primary Enuresis) 138
Non-24 Sleep-Wake Disorder 272
Obesity 273
Obsessive-Compulsive Disorder (OCD) 275
Odor: Fecal (Fecal Odor) 143
Onychomycosis (Fungal Nail) 276
Ophthalmia Neonatorum: Chlamydial 277
Ophthalmia Neonatorum: Gonococcal 278
Opioid Dependence Opioid Withdrawal Syndrome 278
Opioid-Induced Constipation (OIC) 280
Opioid Overdose 280
Opioid Withdrawal Syndrome (see Opioid Dependence) 278
Orthostatic Hypotension, Neurogenic 222
Osgood-Schlatter Disease 281
Osteoarthritis 281
Osteomalacia (Hypophosphatasia), Rickets 222
Osteoporosis 283
Osteoporosis Prophylaxis (see Osteoporosis) 283
Otitis Externa 288
Otitis Media: Acute 290
Otitis Media: Serous 294
Overactive Bladder 227
Overdose: Opioid 280
Paget’s Disease: Bone 294
Pain 296
Painful Intercourse (Dyspareunia, Postmenopausal) 132
Pancreatic Enzyme Deficiency 306
Panic Disorder 308
Parathyroid Hormone Deficiency (Hypoparathyroidism) 221
Parkinson’s Disease 312
Paronychia (Periungual Abscess) 314
Parotitis: Infectious (Mumps) 262
Pediculosis: Pediculosis Humanus Capitis (Head Lice) and Phthirus (Pubic Lice) 315
Pelvic Inflammatory Disease (PID) 316
Peptic Ulcer Disease (PUD) 317
Peripheral Adrenergic Blocker 208
Peripheral Adrenergic Blocker/HCTZ Combinations 212
<table>
<thead>
<tr>
<th>Condition</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodontitis (Gingivitis)</td>
<td>155</td>
</tr>
<tr>
<td>Peripheral Neuritis</td>
<td>319</td>
</tr>
<tr>
<td>Peripheral Neuropathic Pain</td>
<td>319</td>
</tr>
<tr>
<td>Peripheral Neuropathic Pain, Peripheral</td>
<td></td>
</tr>
<tr>
<td>Neuropathic Pain</td>
<td></td>
</tr>
<tr>
<td>Peripheral Vascular Disease (PVD, Arterial Insufficiency, Intermittent Claudication)</td>
<td>321</td>
</tr>
<tr>
<td>Periungal Abscess (Paronychia)</td>
<td>314</td>
</tr>
<tr>
<td>Pernicious Anemia (Vitamin B12 Deficiency)</td>
<td>16</td>
</tr>
<tr>
<td>Perspiration: Excessive (Hyperhidrosis)</td>
<td>196</td>
</tr>
<tr>
<td>Pertussis (Whooping Cough)</td>
<td>322</td>
</tr>
<tr>
<td>Pharyngitis: Gonococcal</td>
<td>323</td>
</tr>
<tr>
<td>Pharyngitis: Streptococcal</td>
<td>324</td>
</tr>
<tr>
<td>Pheochromocytoma</td>
<td>327</td>
</tr>
<tr>
<td>Pinworm (Enterobius vermicularis)</td>
<td>327</td>
</tr>
<tr>
<td>Pityriasis Alba</td>
<td>327</td>
</tr>
<tr>
<td>Pityriasis Rosea</td>
<td>328</td>
</tr>
<tr>
<td>Plague (Yersinia pestis)</td>
<td>328</td>
</tr>
<tr>
<td>Plantar Wart (Verruca plantaris)</td>
<td>448</td>
</tr>
<tr>
<td>Pneumococcal Pneumonia</td>
<td>339</td>
</tr>
<tr>
<td>Pneumocystis jiroveci Pneumonia</td>
<td>329</td>
</tr>
<tr>
<td>Pneumonia: Chlamydial</td>
<td></td>
</tr>
<tr>
<td>Pneumonia: Community Acquired (CAP)/Community Acquired Bacterial Pneumonia (CABP)</td>
<td>330</td>
</tr>
<tr>
<td>Pneumonia: Legionella</td>
<td>337</td>
</tr>
<tr>
<td>Pneumonia: Mycoplasma</td>
<td>338</td>
</tr>
<tr>
<td>Pneumonia: Pneumococcal</td>
<td>339</td>
</tr>
<tr>
<td>Poliomyelitis</td>
<td>340</td>
</tr>
<tr>
<td>Polyarticular juvenile Idiopathic Arthritis (PJIA)</td>
<td>340</td>
</tr>
<tr>
<td>Polycystic Ovarian Syndrome (Stein-Leventhal Disease)</td>
<td>341</td>
</tr>
<tr>
<td>Polymyalgia Rheumatica</td>
<td>341</td>
</tr>
<tr>
<td>Pompholyx (Dyshidrosis, Dyshydrotic Eczema)</td>
<td>126</td>
</tr>
<tr>
<td>Postherpetic Neuralgia</td>
<td>342</td>
</tr>
<tr>
<td>Postmenopausal Dyspareunia</td>
<td>132</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder (PTSD)</td>
<td>345</td>
</tr>
<tr>
<td>Potassium Deficiency (Hypokalemia)</td>
<td>220</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>349</td>
</tr>
<tr>
<td>Premenstrual Dysphoric Disorder (PMDD)/Premenstrual Syndrome (PMS)</td>
<td>349</td>
</tr>
<tr>
<td>Primary Immunodeficiency in Adults</td>
<td>351</td>
</tr>
<tr>
<td>Premenstrual Syndrome (PMS)</td>
<td>349</td>
</tr>
<tr>
<td>Premenstrual Dysphoric Disorder (PMDD)</td>
<td>349</td>
</tr>
<tr>
<td>Pressure Sore (Decubitus Ulcer)</td>
<td>434</td>
</tr>
<tr>
<td>Proctitis, Proctocolitis, Enteritis</td>
<td>351</td>
</tr>
</tbody>
</table>
Contents

Prostatitis: Acute 352
Prostatitis: Chronic 352
Pruritus 353
Pruritus Ani
   (see Pruritis) 353
   (see Hemorrhoids) 180
Pseudobulbar Affect (PBA) Disorder 354
Pseudogout 354
Pseudomembranous Colitis 355
Psittacosis 355
Pseudobulbar Affect (PBA) 355
Psoriasis 356
Psoriatic Arthritis 359
Pulmonary Arterial Hypertension (PAH) (WHO Group I) 362
Pulmonary Fibrosis, Idiopathic (IPF) 224
Pyelonephritis: Acute 364
Pyrexia (Fever) 143
Rabies 365
Red Measles (Rubeola, 3-Day Measles) 379
Respiratory Syncytial Virus (RSV) 366
Restless Legs Syndrome (RLS) 366
Retinitis: Cytomegalovirus (CMV) 367
Rheumatoid Arthritis (RA) 367
Rhinitis/Sinusitis: Allergic 372
Rhinitis Medicamentosa 376
Rhinitis: Vasomotor 377
Rhinosinusitis: Acute Bacterial (ABRS) 384
Rickets (Hypophosphatasia), Osteomalacia 222
Rickettsia rickettsii (Rocky Mountain Spotted Fever) 377
Rocky Mountain Spotted Fever (Rickettsia rickettsii) 377
Rosacea (Acne Rosacea) 3
Roseola (Exanthem Subitum) 377
Rotavirus Gastroenteritis 378
Roundworm (Ascariasis) 378
Rubella (German Measles) 379
Rubeola (Red Measles) 379
Salmonella typhi (Typhoid Fever) 431
Salmonellosis 379
Sarcopes scabiei (Scabies) 380
Scabies (Sarcopte scabiei) 380
Scarlet Fever (Scarlatina) 380
Sebaceous Cyst: Infected (see Skin Infection) 387
Seborrhea (Seborrheic Dermatitis) 113
Seizure Disorder 382
Contents

Sexual Assault (STD Exposure) 382
Shigellosis 383
Shingles (Herpes Zoster) 189
Sinusitis/Rhinosinusitis: Acute Bacterial 384
Sinusitis: Allergic 372
Sjogrens Syndrome (Chronic Dry Mouth) 386
Skin: Calloused 387
Skin Infection: Bacterial (Carbuncle, Folliculitis, Furuncle) 387
Sleep Apnea (Hypopnea Syndrome) 391
Sleepiness: Excessive/Shift Work Sleep Disorder (SWSD) 391
Sleep-Wake Disorder (Non-24 Sleep-Wake Disorder) 272
Smallpox (Variola Major) 392
Solar Keratosis (Actinic Keratosis) 8
Sprain 392
Statin/CCB Combination 215
Status Asthmaticus 392
Status Epilepticus 393
STD Exposure (Sexual Assault) 382
Stein-Leventhal Disease (Polycystic Ovarian Syndrome [PCOS]) 341
Stomatitis (Aphthous Stomatitis) 26
Stress Incontinence 227
Strongyloidiasis (Threadworm) 399
Stye ( Hordeolum) 394
Sunburn 394
Swimmer's Ear (Otitis Externa) 288
Syphilis (Treponema pallidum) 394
Temporal Arteritis 396
Temporomandibular Joint (TMJ) Disorder 396
Tennis Elbow (Epicondylitis) (see Epicondylitis) 139
Tension Headache 172
Testosterone Deficiency 396
Testosterone Deficiency Hypotestosteronemia, Hypogonadism 396
Tetanus 398
Threadworm (Strongyloidiasis) 399
Thrush (Oral Candidiasis) 66
Thyroid Hormone Excess (Hyperthyroidism) 215
Thyroid Hormone Deficiency (Hypothyroidism) 223
Tic Douloureux (Trigeminal Neuralgia) 412
Tinea Capitis 400
Tinea Corporis (Ringworm) 400
Tinea Cruris (Jock Itch) 402
Tinea Pedis (Athlete's Foot) 403
Tinea Versicolor 405
Tobacco Dependence (Nicotine Withdrawal Syndrome) 407
Contents

Tonsillitis: Acute 409
Tremor: Benign Essential 44
Trichinosis 411
Trichomoniasis (Trichomonas vaginalis) 411
Trichuriasis (Whipworm) 450
Trigeminal Neuralgia (TIC Douloureux) 412
Pulmonary Tuberculosis (TB) (Mycobacterium tuberculosis) 414
Type 1 Diabetes Mellitus 417
Type 2 Diabetes Mellitus 421
Typhoid Fever (Salmonella Typhi) 431
Ulcer: Diabetic, Neuropathic (Lower Extremity) Ulcer: Venous Insufficiency (Lower Extremity) 433
Ulcer: Venous Insufficiency (Lower Extremity) 433
Ulcer: Pressure/Decubitus 434
Ulcerative Colitis 434
Urethritis: Nongonococcal (NGU) 436
Urinary Retention: Unobstructive 439
Urinary Tract Infection (UTI, Cystitis: Acute) 439
Urolithiasis (Renal Calculi, Kidney Stones) 446
Urticaria: Chronic Idiopathic (CIU) 447
Urticaria: Acute (Hives) 447
Uncinariasis (Hookworm), Cutaneous Larvae Migrans 191
Vaginal Irritation: External 447
Varicella (Chickenpox) 77
Variola Major (Smallpox) 392
Vascular Headache (Migraine Headache) 167
Vasomotor Rhinitis (Vasomotor Rhinitis) 377
Venereal Warts (Wart: Venereal) 449
Verruca plantaris (Plantar Wart) 448
Verruca vulgaris (Common Wart) 448
Vertigo 448
Viral Upper Respiratory Infection (URI, Common Cold) 84
Vitiligo 448
Vomiting (see Nausea/Vomiting) 269
Wart: Common (Verruca vulgaris) 448
Wart: Plantar (Verruca plantaris) 448
Wart: Venereal Human Papilloma Virus (HPV), Condyloma Acuminata 449
Whipworm (Trichuriasis) 450
Whooping Cough (Pertussis) 322
Wound: Infected, Nonsurgical, Minor 451
Wrinkles: Facial (Crow’s Feet, Frown Lines, Smile Lines) 453
Xerosis 454
Yersinia pestis (Plague) 328
Zollinger-Ellison Syndrome 455
SECTION II: APPENDICES

Appendix A: FDA Pregnancy Categories 459
Appendix B: U.S. Schedule of Controlled Substances 459
Appendix C: JNC-8* and ASH** Hypertension Evaluation and Treatment Recommendations 460
Appendix D: ATP-IV Target Lipid Recommendations 464
Appendix E: Effects of Selected Drugs on Insulin Activity 465
Appendix F: Glycosylated Hemoglobin (HbA1C) and Average Blood Glucose Equivalent 466
Appendix G: Routine Immunization Recommendations 466
Appendix H: Contraceptives: Contraindications and Recommendations 474
  Appendix H.1: 28-Day Oral Contraceptives 475
  Appendix H.2: Extended-Cycle Oral Contraceptives 483
  Appendix H.3: Progesterone-Only Oral Contraceptives (“Mini-Pill”) 484
  Appendix H.4: Injectable Contraceptives 484
    Appendix H.4.1: Injectable Progesterone 484
  Appendix H.5: Transdermal Contraceptive 485
  Appendix H.6: Contraceptive Vaginal Rings 485
  Appendix H.7: Subdermal Contraceptives 485
  Appendix H.8: Intrauterine Contraceptives 486
  Appendix H.9: Emergency Contraception 486
Appendix I: Anesthetic Agents for Local Infiltration and Dermal/Mucosal Membrane Application 487
Appendix J: Oral Prescription NSAIDs 489
Appendix K: Topical Corticosteroids by Potency 494
Appendix L: Oral Corticosteroids 497
Appendix M: Parenteral Corticosteroid Therapy 499
Appendix N: Inhalational Corticosteroid Therapy 500
Appendix O: Oral Antiarrhythmia Drugs 501
Appendix P: Oral Antineoplasia Drugs 504
Appendix Q: Oral and Depot Antipsychosis Drugs 506
Appendix R: Oral Anticonvulsant Drugs 508
Appendix S: Oral Anti-HIV Drugs With Dose Forms 510
Appendix T: Coumadin (Warfarin) 515
Appendix U: Low Molecular Weight Heparins 516
Appendix V: Factor Xa Inhibitor Therapy 516
Appendix W: Direct Thrombin Inhibitor Therapy 518
Appendix X: Platelet Aggregation Inhibitor Therapy 519
Appendix Y: Protease-Activated Receptor-1 (PAR-1) Inhibitor Therapy 520
Appendix Z: Prescription Prenatal Vitamins 520
Appendix AA: Oral Prescription Drugs for the Management of Allergy, Cough, and Cold Symptoms 524
Appendix BB: Systemic Anti-infective Drugs 530
Appendix CC.1: Acyclovir (Zovirax Suspension) 541
Appendix CC.2: Amantadine (Symmetrel Syrup) 542
Appendix CC.3: Amoxicillin (Amoxil Suspension, Trimox Suspension) 543
Appendix CC.4: Amoxicillin/clavulanate (Augmentin Suspension) 545
Appendix CC.5: Amoxicillin/clavulanate (Augmentin ES 600 Suspension) 546
Appendix CC.6: Ampicillin (Omnipen Suspension, Principen Suspension) 547
Appendix CC.7: Azithromycin (Zithromax Suspension, Zmax Suspension) 548
Appendix CC.8: Cefaclor (Ceclor Suspension) 549
Appendix CC.9: Cefadroxil (Duricef Suspension) 550
Appendix CC.10: Cefdinir (Omnicef Suspension) 551
Appendix CC.11: Cefixime (Suprax Oral Suspension) 552
Appendix CC.12: Cefpodoxime Proxetil (Vantin Suspension) 553
Appendix CC.13: Cefprozil (Cefzil Suspension) 554
Appendix CC.14: Ceftibuten (Cedax Suspension) 555
Appendix CC.15: Cefuroxime Axetil (Ceftin Suspension) 556
Appendix CC.16: Cephalexin (Keflex Suspension) 557
Appendix CC.17: Clarithromycin (Biaxin Suspension) 558
Appendix CC.18: Clindamycin (Cleocin Pediatric Granules) 559
Appendix CC.19: Dicloxacillin (Dynapen Suspension) 560
Appendix CC.20: Doxycycline (Vibramycin Suspension) 561
Appendix CC.21: Erythromycin Estolate (Ilosone Suspension) 562
Appendix CC.22: Erythromycin Ethylsuccinate (E.E.S. Suspension, Ery-Ped Drops/Suspension) 563
Appendix CC.23: Erythromycin/Sulfamethoxazole (Eryzole, Pediazole) 565
Appendix CC.24: Fluconazole (Diflucan Suspension) 566
Appendix CC.25: Furazolidone (Furoxone Liquid) 567
Appendix CC.26: Griseofulvin, Microsize (Grifulvin V Suspension) 568
Appendix CC.27: Itraconazole (Sporanox Solution) 569
Appendix CC.28: Loracarbef (Lorabid Suspension) 570
Appendix CC.29: Nitrofurantoin (Furadantin Suspension) 571
Appendix CC.30: Penicillin V Potassium (Pen-Vee K Solution, Veetids Solution) 572
Appendix CC.31: Rimantadine (Flumadine Syrup) 573
Appendix CC.32: Tetracycline (Sumycin Suspension) 574
Appendix CC.33: Trimethoprim (Primsol Suspension) 575
Appendix CC.34: Trimethoprim/Sulfamethoxazole (Bactrim Suspension, Septra Suspension) 576
Appendix CC.35: Vancomycin (Vancocin Suspension) 577

Resources 579

Index: Brand/Generic Drug Name Cross-Reference With FDA Pregnancy Category and Controlled Drug Category 585
REVIEWERS

Kelley M. Anderson, PhD, FNP
Assistant Professor of Nursing, Georgetown University School of Nursing & Health Studies, Washington, DC

Kathleen Bradbury-Golas, DNP, RN, FNP-C, ACNS-BC
Associate Clinical Professor, Drexel University, Philadelphia, Pennsylvania
Family Nurse Practitioner, Virtua Medical Group, Hammonton and Linwood, New Jersey

Lori Brien, MS, ACNP-BC
Instructor, AG-ACNP Program, Georgetown University School of Nursing & Health Studies, Washington, DC

Jill C. Cash, MSN, APN
Nurse Practitioner, Logan Primary Care, West Frankfort, Illinois

Catherine M. Concert, DNP, RN, FNP-BC, AOCNP, NE-BC, CNL, CGRN
Nurse Practitioner—Radiation Oncology, Laura and Isaac Perlmutter Cancer Center, New York University Langone Medical Center; Clinical Assistant Professor, Pace University Lienhard School of Nursing, New York, New York

Aileen Fitzpatrick, DNP, RN, FNP-BC
Clinical Assistant Professor, Pace University Lienhard School of Nursing, New York, New York

Tracy P. George, DNP, APRN-BC, CNE
Assistant Professor of Nursing, Amy V. Cockroft Fellow 2016–2017, Francis Marion University, Florence, South Carolina

Norma Stephens Hannigan, DNP, MPH, FNP-BC, DCC, FAANP
Clinical Professor of Nursing, Coordinator, Accelerated Second Degree (A2D) Program/Sophomore Honors Program, Hunter College, CUNY Hunter-Bellevue School of Nursing, New York, New York

Ella T. Heitzler, PhD, WHNP-BC, FNP-BC, RNC-OB
Assistant Professor, Georgetown University School of Nursing and Health Studies, Washington, DC
Reviewers

Melissa H. King, DNP, FNP-BC, ENP-BC
Director of Advanced Practice Providers, Director of TelEmergency, Department of Emergency Medicine, University of Mississippi Medical Center, Jackson, Mississippi

Michael Watson, DNP, APRN, FNP-BC
Lead Family Nurse Practitioner, Wadley Regional Medical Center, Emergency Department, Texarkana, Texas
# ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>single-scored tablet</td>
</tr>
<tr>
<td>**</td>
<td>cross-scored tablet</td>
</tr>
<tr>
<td>(II), (III), (IV), (V)</td>
<td>Drug Enforcement Agency (DEA) controlled substance schedule</td>
</tr>
<tr>
<td>(A), (B), (C), (D), (X)</td>
<td>Federal Drug Agency (FDA) pregnancy category</td>
</tr>
<tr>
<td>ABSSSI</td>
<td>acute bacterial skin and skin structure infection</td>
</tr>
<tr>
<td>ac</td>
<td>before meal</td>
</tr>
<tr>
<td>ACEI</td>
<td>angiotensin converting enzyme inhibitor</td>
</tr>
<tr>
<td>ALT</td>
<td>liver enzyme; alanine transaminase (ALT)</td>
</tr>
<tr>
<td>AM</td>
<td>antemeridiem, morning</td>
</tr>
<tr>
<td>APAP</td>
<td>acetaminophen</td>
</tr>
<tr>
<td>AST</td>
<td>liver enzyme, aspartate transaminase</td>
</tr>
<tr>
<td>Amp</td>
<td>ampule</td>
</tr>
<tr>
<td>Apo-B</td>
<td>apolipoprotein b</td>
</tr>
<tr>
<td>ARB</td>
<td>angiotensin receptor blocker</td>
</tr>
<tr>
<td>ART</td>
<td>antiretroviral treatment</td>
</tr>
<tr>
<td>ASE</td>
<td>adverse side effect</td>
</tr>
<tr>
<td>AVB</td>
<td>atrioventricular heart block</td>
</tr>
<tr>
<td>bid</td>
<td>bis in die, twice-a-day</td>
</tr>
<tr>
<td>BP</td>
<td>blood pressure</td>
</tr>
<tr>
<td>CAD</td>
<td>coronary artery disease</td>
</tr>
<tr>
<td>calib applicator</td>
<td>calibrated applicator</td>
</tr>
<tr>
<td>cap</td>
<td>capsule</td>
</tr>
<tr>
<td>CAP</td>
<td>community acquired pneumonia</td>
</tr>
<tr>
<td>CCB</td>
<td>calcium channel blocker</td>
</tr>
<tr>
<td>CFC</td>
<td>chlorofluorocarbon, inhaler propellant</td>
</tr>
<tr>
<td>chew tab</td>
<td>chewable tablet</td>
</tr>
</tbody>
</table>
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child-Pugh A</td>
<td>mild liver disease/dysfunction</td>
</tr>
<tr>
<td>Child-Pugh B</td>
<td>moderate liver disease/dysfunction</td>
</tr>
<tr>
<td>Child-Pugh C</td>
<td>severe liver disease/dysfunction</td>
</tr>
<tr>
<td>CHF</td>
<td>congestive heart failure</td>
</tr>
<tr>
<td>CKD</td>
<td>chronic kidney disease</td>
</tr>
<tr>
<td>clnsr</td>
<td>cleanser</td>
</tr>
<tr>
<td>conc</td>
<td>concentrate, concentration</td>
</tr>
<tr>
<td>conj estra</td>
<td>conjugated estrogen</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>cplt</td>
<td>caplet</td>
</tr>
<tr>
<td>Cr</td>
<td>creatinine</td>
</tr>
<tr>
<td>CrCl</td>
<td>creatinine clearance measured in mL/min</td>
</tr>
<tr>
<td>CRI</td>
<td>chronic renal insufficiency</td>
</tr>
<tr>
<td>CRF</td>
<td>chronic renal failure</td>
</tr>
<tr>
<td>crm</td>
<td>cream</td>
</tr>
<tr>
<td>CVD</td>
<td>cardiovascular disease</td>
</tr>
<tr>
<td>DDAVP</td>
<td>desmopressin acetate</td>
</tr>
<tr>
<td>dL</td>
<td>deciliter</td>
</tr>
<tr>
<td>DM</td>
<td>diabetes mellitus</td>
</tr>
<tr>
<td>DMARDs</td>
<td>disease modifying anti-rheumatoid drugs</td>
</tr>
<tr>
<td>DVT</td>
<td>deep vein thrombosis</td>
</tr>
<tr>
<td>ent-coat</td>
<td>enteric-coated</td>
</tr>
<tr>
<td>EDTA</td>
<td>edatate calcium disodium</td>
</tr>
<tr>
<td>EE</td>
<td>ethinyl estradiol</td>
</tr>
<tr>
<td>eGFR</td>
<td>estimated glomerular filtration tate</td>
</tr>
<tr>
<td>EKG</td>
<td>electrocardiogram</td>
</tr>
<tr>
<td>EIA</td>
<td>exercise-induced asthma</td>
</tr>
<tr>
<td>EIAED</td>
<td>enzyme-inducing antiepileptic drug</td>
</tr>
<tr>
<td>EIB</td>
<td>exercise-induced bronchospasm</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>elix</td>
<td>elixer</td>
</tr>
<tr>
<td>emol, emol crm</td>
<td>emollient, emollient cream</td>
</tr>
<tr>
<td>ESA</td>
<td>erythropoiesis stimulating agent</td>
</tr>
<tr>
<td>ESR</td>
<td>erythrocyte sedimentation rate</td>
</tr>
<tr>
<td>ESRD</td>
<td>end stage renal disease</td>
</tr>
<tr>
<td>est</td>
<td>estradiol</td>
</tr>
<tr>
<td>EX, ext-rel</td>
<td>extended-release</td>
</tr>
<tr>
<td>g</td>
<td>gram</td>
</tr>
<tr>
<td>(G)</td>
<td>generic, generic availability</td>
</tr>
<tr>
<td>GABHS</td>
<td>group a beta-hemolytic streptococcus</td>
</tr>
<tr>
<td>GAD</td>
<td>generalized anxiety disorder</td>
</tr>
<tr>
<td>GI</td>
<td>gastrointestinal</td>
</tr>
<tr>
<td>gtt, gtts</td>
<td>drop, drops</td>
</tr>
<tr>
<td>GU</td>
<td>genitourinary</td>
</tr>
<tr>
<td>H₂O₂</td>
<td>hydrogen peroxide</td>
</tr>
<tr>
<td>HAART</td>
<td>highly active antiretroviral treatment</td>
</tr>
<tr>
<td>HCT</td>
<td>hematocrit</td>
</tr>
<tr>
<td>HCTZ</td>
<td>hydrochlorothiazide</td>
</tr>
<tr>
<td>HAV</td>
<td>hepatitis A virus</td>
</tr>
<tr>
<td>HBV</td>
<td>hepatitis C virus</td>
</tr>
<tr>
<td>HCV</td>
<td>hepatitis C virus</td>
</tr>
<tr>
<td>HDL, HDL-C</td>
<td>high density lipoprotein cholesterol</td>
</tr>
<tr>
<td>HFA</td>
<td>hydrofluoroalkane (inhaler propellant phasing in)</td>
</tr>
<tr>
<td>Hgb</td>
<td>hemoglobin</td>
</tr>
<tr>
<td>HgbA₁c</td>
<td>hemoglobin A₁c, the standard POC diagnostic test for diabetes</td>
</tr>
<tr>
<td>hgc</td>
<td>hard-gel capsule</td>
</tr>
<tr>
<td>HPV</td>
<td>human papilloma virus</td>
</tr>
<tr>
<td>HR</td>
<td>heart rate in beats per minute</td>
</tr>
<tr>
<td>HRT</td>
<td>hormone replacement therapy</td>
</tr>
</tbody>
</table>
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS</td>
<td>hour of sleep, bedtime</td>
</tr>
<tr>
<td>IBS-C</td>
<td>irritable bowel syndrome with constipation</td>
</tr>
<tr>
<td>IBS-D</td>
<td>irritable bowel syndrome with diarrhea</td>
</tr>
<tr>
<td>ID</td>
<td>intradermal</td>
</tr>
<tr>
<td>IM</td>
<td>intramuscular</td>
</tr>
<tr>
<td>immed-rel</td>
<td>immediate-release</td>
</tr>
<tr>
<td>inhal</td>
<td>inhalation</td>
</tr>
<tr>
<td>inj</td>
<td>injection</td>
</tr>
<tr>
<td>IU</td>
<td>international unit</td>
</tr>
<tr>
<td>IUD</td>
<td>intrauterine device</td>
</tr>
<tr>
<td>IV</td>
<td>intravenous</td>
</tr>
<tr>
<td>JRA</td>
<td>juvenile rheumatoid arthritis</td>
</tr>
<tr>
<td>K+</td>
<td>potassium</td>
</tr>
<tr>
<td>kg</td>
<td>kilogram</td>
</tr>
<tr>
<td>L</td>
<td>liter, 1000 ml</td>
</tr>
<tr>
<td>LAA</td>
<td>long-acting anticholinergic</td>
</tr>
<tr>
<td>LABA</td>
<td>long-actine beta agonist</td>
</tr>
<tr>
<td>LAR</td>
<td>long-acting release</td>
</tr>
<tr>
<td>LDL, LDL-C</td>
<td>low density lipoprotein cholesterol</td>
</tr>
<tr>
<td>LFTs</td>
<td>liver function tests</td>
</tr>
<tr>
<td>Liq</td>
<td>liquid</td>
</tr>
<tr>
<td>lotn</td>
<td>lotion</td>
</tr>
<tr>
<td>LR</td>
<td>lactated ringers IV solution</td>
</tr>
<tr>
<td>MAOI</td>
<td>monoamine oxidase inhibitor</td>
</tr>
<tr>
<td>mcg</td>
<td>microgram</td>
</tr>
<tr>
<td>MDD</td>
<td>major depressive disorder</td>
</tr>
<tr>
<td>MDI</td>
<td>metered dose inhaler</td>
</tr>
<tr>
<td>mfr</td>
<td>manufacturer</td>
</tr>
<tr>
<td>mg</td>
<td>milligram</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>mg/dL</td>
<td>milligrams per deciliter</td>
</tr>
<tr>
<td>mg/kg/day</td>
<td>milligram per kilogram per day</td>
</tr>
<tr>
<td>ml, mL</td>
<td>milliliter</td>
</tr>
<tr>
<td>MRSA</td>
<td>methicillin-resistant staphylococcus aureus</td>
</tr>
<tr>
<td>MS</td>
<td>multiple sclerosis</td>
</tr>
<tr>
<td>MTX</td>
<td>methotrexate</td>
</tr>
<tr>
<td>Na⁺</td>
<td>sodium</td>
</tr>
<tr>
<td>NaCl</td>
<td>sodium chloride</td>
</tr>
<tr>
<td>NaHCO₃</td>
<td>sodium bicarbonate</td>
</tr>
<tr>
<td>NMDA</td>
<td>n-methyl-d-aspartate receptor antagonist</td>
</tr>
<tr>
<td>NNRTI</td>
<td>nonnucleoside reverse transcriptase inhibitor</td>
</tr>
<tr>
<td>NOH</td>
<td>neurogenic orthostatic hypotension</td>
</tr>
<tr>
<td>non-HDL-C</td>
<td>non-high density lipoprotein cholesterol</td>
</tr>
<tr>
<td>norgest</td>
<td>norgestimate</td>
</tr>
<tr>
<td>nPEP</td>
<td>non-occupational post-exposure prophylaxis</td>
</tr>
<tr>
<td>NR</td>
<td>not rated, pregnancy category not assigned</td>
</tr>
<tr>
<td>NRTI</td>
<td>nucleoside reverse transcriptase inhibitor</td>
</tr>
<tr>
<td>NS</td>
<td>nasal spray; normal saline</td>
</tr>
<tr>
<td>NSAID</td>
<td>nonsteroidal anti-inflammatory drug</td>
</tr>
<tr>
<td>OA</td>
<td>osteoarthritis</td>
</tr>
<tr>
<td>OCD</td>
<td>obsessive compulsive disorder</td>
</tr>
<tr>
<td>OCP</td>
<td>oral contraceptive pill</td>
</tr>
<tr>
<td>ODT</td>
<td>orally-disintegrating tablet</td>
</tr>
<tr>
<td>Oint</td>
<td>ointment</td>
</tr>
<tr>
<td>ophthalm</td>
<td>ophthalmic, pertaining to the eye</td>
</tr>
<tr>
<td>orally-disint</td>
<td>orally-disintegrating</td>
</tr>
<tr>
<td>OTC</td>
<td>over-the-counter</td>
</tr>
<tr>
<td>Otic</td>
<td>pertaining to the ear</td>
</tr>
<tr>
<td>oz</td>
<td>ounce, 30 ml</td>
</tr>
</tbody>
</table>
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>pc</td>
<td>after meals</td>
</tr>
<tr>
<td>PBA</td>
<td>pseudobulbar affect</td>
</tr>
<tr>
<td>PCOS</td>
<td>polycystic ovarian syndrome; Stein-Leventhal Disease</td>
</tr>
<tr>
<td>Pediatric</td>
<td>newborn to ≤18 years-of-age</td>
</tr>
<tr>
<td>PD</td>
<td>Parkinson's disease</td>
</tr>
<tr>
<td>PDE5</td>
<td>phosphodiesterase type 5 inhibitor</td>
</tr>
<tr>
<td>PJIA</td>
<td>polyarticular juvenile idiopathic arthritis</td>
</tr>
<tr>
<td>PM</td>
<td>post-meridiem, evening</td>
</tr>
<tr>
<td>PMDD</td>
<td>premenstrual Dysmorphic Disorder</td>
</tr>
<tr>
<td>PMHx</td>
<td>past medical history</td>
</tr>
<tr>
<td>PPI</td>
<td>proton pump inhibitor</td>
</tr>
<tr>
<td>PO</td>
<td>per oral, by mouth</td>
</tr>
<tr>
<td>PO4⁻³</td>
<td>phosphate</td>
</tr>
<tr>
<td>POC</td>
<td>point of care</td>
</tr>
<tr>
<td>Post-op</td>
<td>post-operative</td>
</tr>
<tr>
<td>PR</td>
<td>per rectum</td>
</tr>
<tr>
<td>PRN</td>
<td>as needed</td>
</tr>
<tr>
<td>PTSD</td>
<td>post traumatic stress disorder</td>
</tr>
<tr>
<td>PUD</td>
<td>peptic ulcer disease</td>
</tr>
<tr>
<td>PVD</td>
<td>peripheral vascular disease</td>
</tr>
<tr>
<td>pwdr</td>
<td>powder</td>
</tr>
<tr>
<td>pwdr w. diluent</td>
<td>powder with diluent</td>
</tr>
<tr>
<td>q</td>
<td>per</td>
</tr>
<tr>
<td>qd</td>
<td>once daily</td>
</tr>
<tr>
<td>qHS</td>
<td>per hour of sleep, bedtime</td>
</tr>
<tr>
<td>qid</td>
<td>quater in die, four times-a-day</td>
</tr>
<tr>
<td>RA</td>
<td>rheumatoid arthritis</td>
</tr>
<tr>
<td>RAI</td>
<td>reversible anticholinesterase inhibitor</td>
</tr>
<tr>
<td>RBC</td>
<td>red blood cell</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>SC</td>
<td>subcutaneous</td>
</tr>
<tr>
<td>sgc</td>
<td>soft-gel capsule</td>
</tr>
<tr>
<td>SGOT</td>
<td>serum glutamic-oxaloacetic transaminase</td>
</tr>
<tr>
<td>SGPT</td>
<td>serum glutamic-pyruvic transaminase</td>
</tr>
<tr>
<td>SL</td>
<td>sublingual, under the tongue</td>
</tr>
<tr>
<td>syr</td>
<td>syrup</td>
</tr>
<tr>
<td>soln</td>
<td>solution</td>
</tr>
<tr>
<td>supp</td>
<td>suppository</td>
</tr>
<tr>
<td>susp</td>
<td>suspension</td>
</tr>
<tr>
<td>sust-rel</td>
<td>sustained release</td>
</tr>
<tr>
<td>SNRI</td>
<td>selective serotonin and norepinephrine reuptake inhibitor</td>
</tr>
<tr>
<td>SR</td>
<td>sustained-release</td>
</tr>
<tr>
<td>SSRI</td>
<td>selective serotonin reuptake inhibitor</td>
</tr>
<tr>
<td>STD</td>
<td>sexually transmitted disease</td>
</tr>
<tr>
<td>T1DM</td>
<td>type 1 diabetes mellitus</td>
</tr>
<tr>
<td>T2DM</td>
<td>type 2 diabetes mellitus</td>
</tr>
<tr>
<td>T3</td>
<td>liothyronine</td>
</tr>
<tr>
<td>T4</td>
<td>levothyroxine</td>
</tr>
<tr>
<td>tab</td>
<td>tablet</td>
</tr>
<tr>
<td>TCA</td>
<td>tricyclic antidepressant</td>
</tr>
<tr>
<td>TG</td>
<td>triglyceride</td>
</tr>
<tr>
<td>tid</td>
<td>ter in die, three times-a-day</td>
</tr>
<tr>
<td>TMP/SMX</td>
<td>trimethoprim-sulfamethoxizole</td>
</tr>
<tr>
<td>trans-sys</td>
<td>transdermal system</td>
</tr>
<tr>
<td>TRD</td>
<td>treatment-resistant depression</td>
</tr>
<tr>
<td>TSH</td>
<td>thyroid stimulating hormone</td>
</tr>
<tr>
<td>tsp</td>
<td>teaspoon, 4-5 ml</td>
</tr>
<tr>
<td>TSSRI</td>
<td>thienobenzodiazepine-selective serotonin reuptake inhibitor</td>
</tr>
</tbody>
</table>
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>VVC</td>
<td>vulvovaginal candidiasis</td>
</tr>
<tr>
<td>WBC</td>
<td>white blood cell</td>
</tr>
<tr>
<td>w.</td>
<td>with</td>
</tr>
<tr>
<td>XL</td>
<td>extra long-acting</td>
</tr>
<tr>
<td>XOI</td>
<td>xanthine oxidase inhibitor</td>
</tr>
<tr>
<td>XR</td>
<td>extended-release</td>
</tr>
</tbody>
</table>
PREFACE

The APRN's Complete Guide to Prescribing Drug Therapy is a prescribing reference intended for use by health care providers in all clinical practice settings who are involved in the primary care management of patients with acute, episodic, and chronic health problems. It is organized in a concise and easy-to-read format. Comments are interspersed throughout, including such clinically useful information as laboratory values to be monitored, patient teaching points, and safety information.

This clinical guide is divided into two sections. Section I presents drug treatment regimens for over 500 clinical diagnoses. Each drug is listed alphabetically by generic name, followed by the FDA pregnancy category (A, B, C, D, X, or NR if a pregnancy category has not been assigned), whether the drug is available over-the-counter (OTC), DEA schedule (I, II, III, IV, V), generic availability (G), adult and pediatric dosing regimens, brand names and available dose forms, whether tablets, caplets, or chew tabs are scored (*) or cross-scored (**), flavors of chewable, sublingual, buccal, and liquid forms and information regarding additives (e.g., dye-free, sugar-free, preservative-free or preservative type, and alcohol-free or alcohol content).

Section II presents clinically useful information in convenient table format, including: the JNC-8 recommendations for hypertension management, the U.S. schedule of controlled substances and the FDA pregnancy categories, measurement conversions, childhood and adult immunization recommendations, brand-name drugs (with contents) for the management of common respiratory symptoms, anti-infectives by classification, pediatric dosing by weight for liquid forms, gluco-corticosteroids by potency and route of administration, and contraceptives by route of administration and estrogen and/or progesterone content. An alphabetical cross reference index of drugs by generic and brand name, with FDA pregnancy category and controlled drug schedule, facilitates quick identification of drugs by alternate names, relative safety during pregnancy, and DEA schedule.

Selected diagnoses (e.g., angina, ADD/ADHD, growth failure, glaucoma, Parkinson's disease, CMV retinitis, multiple sclerosis, cystic fibrosis) and selected drugs (e.g., antineoplastics, antipsychotics, anti-arrhythmics, anti-HIV drugs, and anticoagulants) are included as patients are often referred by surgeons and emergency and urgent care providers to the primary care provider for follow-up monitoring and management.

Safe, efficacious, prescribing and monitoring of drug therapy regimens require adequate knowledge about (a) the pharmacodynamics and pharmacokinetics of drugs, (b) concomitant therapies, and (c) individual characteristics of the patient (e.g., current and past medical history, physical examination findings, hepatic and renal function, and co-morbidities). Users of this clinical guide are encouraged to utilize the manufacturer's package insert, recommendations and guidance of specialists, standard of practice protocols, and the current research literature for more comprehensive information.
about specific drugs (e.g., special precautions, drug-drug and drug-food interactions, risk versus benefit, age-related considerations, adverse reactions) and appropriate use with individual patients.
This publication, which we consider to be a “must have” for students, academicians, and practicing clinicians with prescriptive authority, represents the culmination of Springer Publishing Company’s collaborative team effort. Margaret Zuccarini, Publisher, Nursing, and the Editorial Committee, shared my vision for a handy pocket prescribing reference for new and experienced prescribers in primary care. Joanne Jay, Vice President, Production and Manufacturing, designed the contents for ease and efficiency of user navigation. The production team at Exeter Premedia Services, on behalf of Springer Publishing Company, understood the critical nature of exactness in this prescribing resource, and faithfully managed the complex files as content was updated and cross-paginated for the final product. The work of the reviewers from academia and clinical practice was essential to the process and their contributions are greatly appreciated. I am proud of my association with these dedicated professionals and I thank them on behalf of the medical and advanced practice nursing community worldwide, for supporting the end goal of quality health care for all.
Pediatric: <3 years: not recommended; ≥3 years: same as adult

**NovoLog**
- **Vial:** 100 U/ml (10 ml); **PenFill cartridge:** 100 U/ml (3 ml, 5/pk) (zinc, m-cresol)

- *insulin glulisine (rDNA origin)* (C) onset <15 minutes; peak 1 hour; duration 2-4 hours; administer up to 15 minutes before, or within 20 minutes after starting a meal; use with an intermediate or long-acting insulin; SC only; may administer via insulin pump; do not dilute or mix with other insulin in pump

  Pediatric: <4 years: not recommended; ≥4 years: same as adult

**Apidra**
- **Vial:** 100 U/ml (10 ml); **Cartridge:** 100 U/ml (3 ml, 5/pck; m-cresol)

- *insulin lispro (recombinant)* (B) onset <15 minutes; peak 1 hour; duration 3.5-4.5 hours; administer up to 15 minutes before, or immediately after, a meal; SC or IV infusion pump only

  Pediatric: <3 years: not recommended; ≥3 years: same as adult

**Humalog**
- Vial: 100 U/ml (10 ml); **Prefilled disposable KwikPen:** 100 U/ml (3 ml, 5/pck) (zinc, m-cresol); **HumaPen Memoir** and **HumaPen Luxura HD inj device** for Humalog cartridges (100 U/ml, 3 ml 5/pck) (zinc, m-cresol)

- *insulin regular (B)*

  **Humulin R U-100 (human, recombinant)** (OTC) onset 30 minutes; peak 2-4 hours; duration up to 6-8 hours; SC or IV or IM

  Vial: 100 U/ml (10 ml)

  **Humulin R U-500 (human, recombinant)** onset 30 minutes; peak 1.75-4 hours; duration up to 24 hours; SC only; for in-hospital use only

  Vial: 500 U/ml (20 ml); **KwikPen:** 3 ml (2, 5/carton)

**Comment:** Humulin R U-500 formulation is 5 times more concentrated than standard U-100 concentration, indicated for adults and children who require ≥200 units of insulin/day, allowing patients to inject 80% less liquid to receive the desired dose.

**Iletin II Regular** *(pork)* (OTC) onset 30 minutes; peak 2-4 hours; duration 6-8 hours; SC, IV or IM

Vial: 100 U/ml (10 ml)

**Novolin R** *(human)* (OTC) onset 30 minutes; peak 2.5-5 hours; duration 8 hours; SC, IV, or IM

Vial: 100 U/ml (10 ml); **PenFill cartridge:** 100 U/ml (1.5 ml, 5/pck); **Prefilled syringe:** 100 U/ml (1.5 ml, 5/pck)

**pramlintide** *(amylin analogue/amylinomimetic)* (C) administer immediately before major meals (≥250 kcal or ≥30 g carbohydrates); initially 15 mcg; titrate in 15 mcg increments for 3 days if no significant nausea occurs; if nausea occurs at 45 or 60 mcg, reduce to 30 mcg; if not tolerated, consider discontinuing therapy; **Maintenance:** 60 mcg (30 mcg only if 60 mcg not tolerated)

**Symlin** Vial: 0.6 mg/ml (5 ml; m-cresol, mannitol)

**Comment:** Symlin is indicated as adjunct to mealtime insulin with or without a sulfonylurea and/or metformin when blood glucose control is suboptimal despite optimal insulin therapy. Do not mix with insulin. When initiating Symlin, reduce preprandial short/rapid-acting insulin dose by 50% and monitor pre- and post-prandial and bedtime blood glucose. Do not use in patients with poor compliance, HgbA1c is >9%, recurrent hypoglycemia requiring assistance in the previous 6 months, or if taking a prokinetic drug. With Type 2 DM, initial therapy is 60 mcg/dose and max is 120 mcg/dose.
Type 1 Diabetes Mellitus □ 419

RAPID-ACTING AND INTERMEDIATE-ACTING INSULIN

Insulin Aspart Protamine Suspension/Insulin Aspart Combinations

- **insulin aspart protamine suspension 70%/insulin aspart 30% (recombinant)** (B) onset 15 min; peak 2.4 hours; duration up to 24 hours; SC only
  - **Pediatric**: not recommended
  - **NovoLog Mix 70/30 (OTC)**: Vial: 100 U/ml (10 ml)
  - **NovoLog Mix 70/30 FlexPen (OTC)**: Prefilled disposable pen: 100 U/ml (3 ml, 5/pck); PenFill cartridge: 100 U/ml (3 ml, 5/pck)

LONG-ACTING INSULINS

- **insulin detemir (human)** (B) administer once daily with evening meal or at HS as basal insulin; may administer twice daily (AM/PM); onset 1 hour; no peak; duration 24 hours; switching from another basal insulin, dose should be the same on a unit-to-unit basis; may need more insulin detemir when switching from NPH; SC only; Type 1: starting dose 1/3 of total daily insulin requirements; rapid-acting or short-acting, pre-meal insulin should be used to satisfy the remainder of daily insulin requirements; Type 2 (inadequately controlled on oral antidiabetic agents): initially 10 units or 0.1-0.2 units/kg, once daily in the evening or divided twice daily (AM/PM)
  - **Pediatric**: <2 years: not recommended; ≥2 years: same as adult
  - **Levemir**:
    - Vial: 100 U/ml (10 ml); FlexPen: 100 U/ml (3 ml, 5/pck; (zinc, m-cresol)
  - **Comment**: Do not mix or dilute insulin detemir with other insulins.

- **insulin isophane suspension (NPH)** (B)
  - **Humulin N (human, recombinant)** (OTC) onset 1-2 hours; peak 6-12 hours; duration 18-24 hours; SC only
    - **Vial**: 100 U/ml (10 ml); **Prefilled disposable pen**: 100 U/ml (3 ml, 5/pck)
  - **Novolin N (recombinant)** (OTC) onset 1.5 hours; peak 4-12 hours; duration 24 hours; SC only
    - **Vial**: 100 U/ml (10 ml); **PenFill cartridge**: 1.5 ml (5/pck); **KwikPens**: 1.5 ml (5/pck)
  - **Iletin II NPH (pork)** (OTC) onset 1-2 hours; peak 6-12 hours; duration 18-26 hours; SC only
    - **Vial**: 100 U/ml (10 ml)

- **insulin glargine (recombinant)** (C)
  - **Comment**: Do not mix or dilute insulin glargine with other insulins.
  - **Basaglar** administer SC once daily, at the same time each day, in the deltoid, abdomen, or thigh; T1DM: initially 1/3 of total daily insulin dose give the remainder of the total dose as short- or rapid-acting preprandial insulin; T2DM: initially 2 units/kilogram or up to 10 units once daily; Switching from once daily insulin glargine 300 units/ml: initially 80% of the insulin glargine 300 units/ml; Switching from twice daily NPH: initially 80% of the total daily NPH dose
    - **Pediatric**: <6 years: not established; ≥6 years: individualize and adjust as needed
    - **Prefilled Basaglar KwikPen (disposable)**, 100 U/ml (3 ml) (5/carton)
  - **Comment**: Basaglar has not pronounced peak; duration 24 hours or longer. Basaglar has an amino acid sequence identical to insulin glargine, Lantus.
  - **Lantus** administer once daily at HS as basal insulin; onset 1.1 hrs, no pronounced peak, duration 24 hours or longer; initial average starting dose 10 units for insulin-naive patients; when switching from once daily NPH or Ultralente
Type 1 Diabetes Mellitus

**Insulin**, initial dose of **insulin glargine** should be on a unit-for-unit basis; when switching from twice daily **NPH** insulin, start at 20% lower than the previous total daily **NPH** dose; SC only

*Pediatric*: <6 years: not recommended; ≥6 years: same as adult

- **Vial**: 100 U/ml (10 ml)
- **Cartridge**: 100 U/ml (3 ml, for use in the OptiPen One Insulin Delivery Device) (5/carton) (m-cresol); SoloStar pen (disposable): 100 U/ml (3 ml) (5/carton)

**Toujeo** administer daily at the same time each day; SC in the upper arm, abdomen, or thigh; onset of action 6 hours; duration of action 24 hours-5 days; **T2DM**, **insulin naïve**: initially 0.2 units/kg; titrate every 3-4 days; **T1DM**, **insulin naïve**: initially 1/3-1/2 total daily insulin dose; remainder as short-acting insulin divided between each meal; **Switch from once daily long- or intermediate-acting insulin**: on a unit-for-unit basis; **Switching from Lantus**: a higher daily dose is expected; **Switching from twice daily NPH**: reduce initial dose by 20% of total daily NPH dose

*Pediatric*: <18 years: not established

- **Soln for SC injection**: 300 units/ml prefilled disposable SoloStar Pen (1.5 ml, 3-5/carton)

**Insulin zinc suspension** *(lente)* *(B)*

*Pediatric*: <18 years: not recommended

- **Humulin L** *(human)* (OTC) onset 1-3 hours; peak 6-12 hours; duration 18-24 hours; SC only
  - **Vial**: 100 U/ml (10 ml)
- **Iletin II Lente** *(pork)* (OTC) onset 1-3 hours; peak 6-12 hours; duration 18-26 hours; SC only
  - **Vial**: 100 U/ml (10 ml)
- **Novolin L** *(human)* (OTC) onset 2.5 hours; peak 7-15 hours; duration 22 hours; SC only
  - **Vial**: 100 U/ml (10 ml)

**Ultra Long-Acting Insulin**

**Insulin lispro protamine/insulin lispro combinations** *(B)*

*Pediatric*: <18 years: not recommended

- **Humulin U** (OTC) **Vial**: 100 U/ml (10 ml)

**Insulin Lispro Protamine/Insulin Lispro Combinations** *(B)*

*Pediatric*: <18 years: not recommended

- **Humalog Mix 75/25** *(human)* onset 15 minutes; peak 30 minutes to 1 hour; duration 24 hours; SC only
  - **Vial**: 100 U/ml (10 ml); Prefilled disposable KwikPen: 100 U/ml (3 ml, 5/pck) (zinc, m-cresol); HumaPen Memoir and HumaPen Luxura HD inj device for Humalog cartridges (100 U/ml, 3 ml, 5/pck) (zinc, m-cresol)

*Pediatric*: <18 years: not recommended

- **Humalog Mix 50/50** *(recombinant)* (B) onset 15 minutes; peak 2.3 hours; range 1-5 hours; SC only

©Springer Publishing Company
Type 2 Diabetes Mellitus

Insulin Isophane Suspension (NPH)/Insulin Regular Combinations

- **NPH 70%/regular 30% (B)**
  - Pediatric: same as adult
  - Humulin 70/30 (human, recombinant) (OTC) onset 30 minutes; peak 2-12 hours; duration up to 24 hours; SC only
    - Vial: 100 U/ml (10 ml)
  - Novolin 70/30 (recombinant) (OTC) onset 30 minutes; peak 2-12 hours; duration up to 24 hours; SC only
    - Vial: 100 U/ml (10 ml)

- **NPH 50%/regular 50% (B)**
  - Pediatric: <18 years: not recommended
  - Humulin 50/50 (human) (OTC) onset 30 minutes; peak 3-5 hours; duration up to 24 hours; SC only
    - Vial: 100 U/ml (10 ml)

Insulin Lispro Protamine/Insulin Lispro Combinations

- **insulin lispro protamine 75%/insulin lispro 25% (B)**
  - Pediatric: <18 years: not recommended
  - Humalog Mix 75/25 (recombinant) onset 15 minutes; peak 30-90 minutes; duration 24 hours; SC only
    - Vial: 100 U/ml (10 ml); Prefilled disposable KwikPen: 100 U/ml (3 ml, 5/pck) (zinc, m-cresol); HumaPen Memoir and Huma-Pen Luxura HD inj device for Humalog cartridges (100 U/ml, 3 ml, 5/pck) (zinc, m-cresol)

- **insulin lispro protamine 50%/insulin lispro 50% (B)**
  - Pediatric: <18 years: not recommended
  - Humalog Mix 50/50 (recombinant) onset 15 minutes; peak 1 hour; duration up to 16 hours; SC only
    - Vial: 100 U/ml (10 ml); Prefilled disposable KwikPen: 100 U/ml (3 ml, 5/pck) (zinc, m-cresol); HumaPen Memoir and HumaPen LUXURA HD inj device for Humalog cartridges (100 U/ml, 3 ml 5/pck) (zinc, m-cresol); U/ml (3 ml, 5/pck) (zinc, m-cresol); HumaPen Memoir and HumaPen LUXURA HD inj device for Humalog cartridges (100 U/ml, 3 ml 5/pck) (zinc, m-cresol); (100 U/ml, 3 ml 5/pck (zinc, m-cresol)

**TYPE 2 DIABETES MELLITUS**

Comment: Normal fasting glucose is <100 mg/dL. Impaired glucose tolerance is a risk factor for type 2 diabetes and a marker for cardiovascular disease risk; it occurs early in the natural history of these two diseases. Impaired fasting glucose is >100 mg/dL and <125 mg/dL. Impaired glucose tolerance is OGTT, 2 hour post-load 75 g glucose >140 mg/dL and <200 mg/dL. Target preprandial glucose is 80 mg/dL to 120 mg/dL. Target bedtime glucose is 100 mg/dL to 140 mg/dL. Target glycosylated hemoglobin (HbA1c) is <7.0%. Addition of daily ACE-I and/or ARB therapy is strongly recommended for renal protection. Consider diabetes screening at age 25 years for persons in high-risk
Type 2 Diabetes Mellitus

groups (non-Caucasian, positive family history for DM, obesity). Hypertension and hyperlipidemia are common comorbid conditions. Macrovascular complications include cerebral vascular disease, coronary artery disease, and peripheral vascular disease. Microvascular complications include retinopathy, nephropathy, neuropathy, and cardiomyopathy. Oral hypoglycemics are contraindicated in pregnancy.

Insulins see Type 1 Diabetes Mellitus page 417

TREATMENT FOR ACUTE HYPOGLYCEMIA

**glucagon (recombinant)** (B) administer SC, IM, or IV; if patient does not respond in 15 minutes, may administer 1 single or 2 divided doses

**Adults and Children:** <20 kg: 0.5 mg or 20-30 mg/kg; >20 kg: 1 mg

SULfonylureas

Comment: Sulfonylureas are secretagogues (i.e., stimulate pancreatic insulin secretion); therefore, the patient taking a sulfonylurea should be alerted to the risk for hypoglycemia. Action is dependent on functioning beta cells in the pancreatic islets.

1st Generation Sulfonylureas

- **chlorpropamide** (C)(G) initially 250 mg/day with breakfast; max 750 mg
  
  **Pediatric:** not recommended
  
  **Diabinese** **Tab:** 100*, 250*mg

- **tolazamide** (C)(G) initially 100-250 mg/day with breakfast; increase by 100-250 mg/day at weekly intervals; maintenance 100 mg 1 g/day; max 1 g/day
  
  **Pediatric:** not recommended
  
  **Tolinase** **Tab:** 100, 250, 500 mg

- **tolbutamide** (C) initially 1-2 g in divided doses; max 2 g/day
  
  **Pediatric:** not recommended
  
  **Tab:** 500 mg

2nd Generation Sulfonylureas

- **glimepiride** (C) initially 1-2 mg once daily with breakfast; after reaching dose of 2 mg, increase by 2 mg at 1-2 week intervals as needed; usual maintenance 1-4 mg once daily; max 8 mg/day
  
  **Pediatric:** not recommended
  
  **Amaryl** **Tab:** 1*, 2*, 4*mg

- **glipizide** (C)(G) not recommended
  
  **Glucotrol** initially 5 mg before breakfast; increase by 2.5-5 mg every few days if needed; max 15 mg/day; max 40 mg/day in divided doses
  
  **Tab:** 5*, 10* mg

- **glyburide** (C)(G) initially 2.5-5 mg/day with breakfast; increase by 2.5 mg at weekly intervals; maintenance 1.25-20 mg/day in a single or 2 divided doses; max 20 mg/day
  
  **Pediatric:** not recommended
  
  **DiaBeta, Micronase** **Tab:** 1.25*, 2.5*, 5*mg

- **glyburide, micronized** (B) not recommended
Type 2 Diabetes Mellitus ■ 423

Glynase PresTab initially 1.5-3 mg/day with breakfast; increase by 1.5 mg at weekly intervals if needed; usual maintenance 0.75-12 mg/day in single or divided doses; max 12 mg/day
Tab: 1.5*, 3*, 6*mg

ALPHA-GLUCOSIDASE INHIBITORS

Comment: Alpha-glucosidase inhibitors block the enzyme that breaks down carbohydrates in the small intestine, delaying digestion and absorption of complex carbohydrates, and lowering peak post-prandial glycemic concentrations. Use as monotherapy or in combination with a sulfonylurea. Contraindicated in inflammatory bowel disease, colon ulceration, and intestinal obstruction. Side effects include flatulence, diarrhea, and abdominal pain.

➤ acarbose (B) initially 25 mg tid ac, increase at 4-8 week intervals; or initially 25 mg once daily, increase gradually to 25 mg tid; usual range 50-100 mg tid; max 100 mg tid
Pediatric: not recommended
Precose Tab: 25, 50, 100 mg

➤ miglitol (B) initially 25 mg tid at the start of each main meal, titrated to 50 mg tid at the start of each main meal; max 100 mg tid
Pediatric: not recommended
Glyset Tab: 25, 50, 100 mg

BIGUANIDE

Comment: The biguanides decrease gluconeogenesis by the liver in the presence of insulin. Action is dependent on the presence of circulating insulin. Lower hepatic glucose production leads to lower overnight, fasting, and pre-prandial plasma glucose levels. Common side effects include GI distress, nausea, vomiting, bloating, and flatulence which usually eventually resolve. May be used as monotherapy (in adults only) or with a sulfonylurea or insulin.

➤ metformin (B)(G) take with meals
Comment: metformin is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.
Fortamet initially 1000 mg once daily; may increase by 500 mg/day at 1 week intervals; max 2.5 g/day
Pediatric: <17 years: not recommended
Tab: 500, 1000 mg ext-rel

Glucophage initially 500 mg bid; may increase by 500 mg/day at 1 week intervals; max 1 g bid or 2.5 g in 3 divided doses; or initially 850 mg once daily in AM; may increase by 850 mg/day in divided doses at 2 week intervals; max 2000 mg/day; take with meals
Pediatric: <10 years: not recommended; ≥10-16 years: use only as monotherapy; dose same as adult
Tab: 500, 850, 1000*mg

Glucophage XR initially 500 mg by mouth every evening; may increase by 500 mg/day at 1 week intervals; max 2 g/day
Pediatric: <10 years: not recommended; ≥10-16 years: use immediate release form; >16 years: same as adult
Tab: 500, 750 mg ext-rel
424 ■ Type 2 Diabetes Mellitus

Glumetza ER (G) initially 1000 mg once daily; may increase by 500 mg/day at week intervals; max 2 g/day

**Pediatric:** <18 years: not recommended

**Tab:** 500, 1000 mg ext-rel

Riomet XR initially 500 mg once daily; may increase by 500 mg/day at 1 week intervals; max 2 g/day in divided doses; take with meals

**Pediatric:** <10 years: not recommended; ≥10 years: monotherapy only

**Oral soln:** 500 mg/ml (4 oz; cherry)

### MEGLITINIDES

**Comment:** Meglitinides are secretagogues (i.e., stimulate pancreatic insulin secretion) in response to a meal. Action is dependent on functioning beta cells in the pancreatic islets. Use as monotherapy or in combination with **metformin**.

- **nateglinide** (C) 60-120 mg tid ac 1-30 minutes prior to start of the meal
  
  **Pediatric:** not recommended

- **Starlix Tab:** 60, 120 mg

- **repaglinide** (C)(G) initially 0.5 mg with 2-4 meals/day; take 30 minutes ac; titrate by doubling dose at intervals of at least 1 week; range 0.5-4 mg with 2-4 meals/day; max 16 mg/day
  
  **Pediatric:** not recommended

- **Prandin Tab:** 0.5, 1, 2 mg

### THIAZOLIDINEDIONES (TZDs)

**Comment:** The TZDs decrease hepatic gluconeogenesis and reduce insulin resistance (i.e., increase glucose uptake and utilization by the muscles). Liver function tests are indicated before initiating these drugs. Do not start if ALT more than 3 times greater than normal. Recheck ALT monthly for the first six months of therapy; then every two months for the remainder of the first year and periodically thereafter. Liver function tests should be obtained at the first symptoms suggestive of hepatic dysfunction (nausea, vomiting, fatigue, dark urine, anorexia, abdominal pain).

- **pioglitazone** (C)(G) initially 15-30 mg once daily; max 45 mg/day as a monotherapy; usual max 30 mg/day in combination with **metformin**, insulin, or a sulfonylurea
  
  **Pediatric:** <18 years: not recommended

  **Actos Tab:** 15, 30, 45 mg

- **rosiglitazone** (C) initially 4 mg/day in a single or 2 divided doses; may increase after 8-12 weeks; max 8 mg/day as a monotherapy or combination therapy with **metformin** or a sulfonylurea; not for use with **insulin**
  
  **Pediatric:** <18 years: not recommended

  **Avandia Tab:** 2, 4, 8 mg

### DIPEPTIDYL PEPTIDASE-4 (DPP-4) INHIBITOR/THIAZOLIDINEDIONE COMBINATION

**Comment:** The FDA has reported that alogliptin-containing drugs may increase the risk of heart failure, especially in patients who already have cardiovascular or renal disease. The drug Oseni (**alogliptin/pioglitazone**) is in this risk group.

- **alogliptin/pioglitazone** (C) take 1 dose once daily with first meal of the day; max: **rosiglitazone** 8 mg and max **glimepiride** per day; Same precautions as **alogliptin** and **pioglitazone**

©Springer Publishing Company
**Type 2 Diabetes Mellitus**

**Pediatric:** <18 years: not recommended

**Oseni**

Tabs:  
- Oseni 12.5/15: alo 12.5 mg/pio 15 mg;  
- Oseni 12.5/30: alo 12.5 mg/pio 30 mg  
- Oseni 12.5/45: alo 12.5 mg/pio 45 mg  
- Oseni 25/15: alo 25 mg/pio 15 mg  
- Oseni 25/30: alo 25 mg/pio 30 mg  
- Oseni 25/45: alo 25 mg/pio 45 mg

**2nd Generation Sulfonylurea/Biguanide Combinations**

Comment: *Metaglip* and *Glucovance* are combination secretagogues (sulfonylureas) and insulin sensitizers (biguanides). *Sulfonylurea*: Action is dependent on functioning beta cells in the pancreatic islets; patient should be alerted to the risk for hypoglycemia. Common side effects of the biguanide include GI distress, nausea, vomiting, bloating, and flatulence which usually eventually resolve. Take with food. *metformin* is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend *metformin*, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

**Glipizide/metformin** (C) take with meals;  
- Primary therapy: 2.5/250 once daily or if FBS is 280-320 mg/dL, may start at 2.5/250 bid; may increase by 1 tab/day every 2 weeks; max 10/2000 per day in 2 divided doses;  
- Second Line Therapy: 2.5/500 or 5/500 bid; may increase by up to 5/500 every 2 weeks; max: 20/2000 per day; Same precautions as *glipizide* and *metformin*

**Pediatric:** not recommended

**Metaglip**

Tabs:  
- Metaglip 2.5/250: glip 2.5 mg/met 250 mg  
- Metaglip 2.5/500: glip 2.5 mg/met 500 mg  
- Metaglip 5/500: glip 5 mg/met 500 mg

**Gliburide/metformin** (B) take with meals;  
- Primary therapy (initial therapy if HgbA1c <9.0%): initially 1.25/250 once daily; max glyburide 20 mg and metformin 2000 mg per day;  
- Primary therapy (initial therapy if HgbA1c >9.0% or FBS >200): initially 1.25/250 bid; max glyburide 20 mg and metformin 2000 mg per day;  
- Second line therapy (initial therapy if HgbA1c >7.0%): initially 2.5/500 or 5/500 bid; max glyburide 20 mg and metformin 2000 mg per day;  
- Previously treated with a sulfonylurea and metformin: dose to approximate total daily doses of glyburide and metformin already being taken; max: glyburide 20 mg and metformin 2000 mg per day; Same precautions as *glyburide* and *metformin*

**Pediatric:** not recommended

**Glucovance**

Tabs:  
- Glucovance 1.25/250: glyb 1.25 mg/met 250 mg  
- Glucovance 2.5/500: glyb 2.5 mg/met 500 mg  
- Glucovance 5/500: glyb 5 mg/met 500 mg

Comment: *metformin* is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend *metformin*, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

**Thiazolidinedione/Biguanide Combination**

**Pioglitazone/metformin** (C) take in divided doses with meals;  
- Previously on *metformin* alone: initially 15mg/500mg or 15mg/850 mg once or twice daily;  
- Previously on *pioglitazone* alone: initially 15mg/500mg bid;  
- Previously on *pioglitazone* and *metformin*:
Type 2 Diabetes Mellitus

switch on a mg/mg basis; may increase after 8-12 weeks; max: pioglitazone 45 mg and metformin 2000 mg per day; Same precautions as pioglitazone and metformin
Pediatric: not recommended

Actoplus Met, Actoplus Met R (G)
Tab: Actoplus Met 15/500: pio 15 mg/met 500 mg
Actoplus Met 15/850: pio 15 mg/met 850 mg
Actoplus Met XR 15/1000: pio 15 mg/met 1000 mg
Actoplus Met XR 30/1000: pio 30 mg/met 1000 mg

Comment: metformin is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

▶ rosiglitazone/metformin (C) take in divided doses with meals; Previously on metformin alone: add rosiglitazone 4 mg/day; may increase after 8-12 weeks; Previously on rosiglitazone alone: add metformin 1000 mg/day; may increase after 1-2 weeks; Previously on rosiglitazone and metformin: switch on a mg/mg basis; may increase rosiglitazone by 4 mg and/or metformin by 500 mg per day; max: rosiglitazone 8 mg and metformin 2000 mg per day; Same precautions as rosiglitazone and metformin
Pediatric: not recommended

Avandamet
Tab: Avandamet 2/500: rosi 2 mg/met 500 mg
Avandamet 2/1000: rosi 2 mg/met 1000 mg
Avandamet 4/500: rosi 4 mg/met 500 mg
Avandamet 4/1000: rosi 4 mg/met 1000 mg

Comment: rosiglitazone has been withdrawn from retail pharmacies. In order to enroll and receive rosiglitazone, healthcare providers and patients must enroll in the Avandia-Rosiglitazone Medicines Access Program. The program limits the use of rosiglitazone to patients already being treated successfully, and those whose blood sugar cannot be controlled with other antidiabetic medicines. metformin is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

THIAZOLIDINEDIONE/SULFONYLUREA COMBINATIONS

▶ pioglitazone/glimepiride (C) take 1 dose daily with first meal of the day; Previously on sulfonylurea alone: initially 30mg/2mg; Previously on pioglitazone and glimepiride: switch on a mg/mg basis; max: pioglitazone 30 mg and glimepiride 4 mg per day; Same precautions as pioglitazone and glimepiride
Pediatric: <18 years: not recommended

Duetact
Tab: Duetact 30/2: pio 30 mg/glim 2 mg
Duetact 304: pio 30 mg/glim 4 mg

▶ rosiglitazone/glimepiride (C) take 1 dose daily with first meal of the day; max: rosiglitazone 8 mg and glimepiride 4 mg per day; Same precautions as rosiglitazone and glimepiride
Pediatric: <18 years: not recommended

Avandaryl
Tab: Avandaryl 4/1: rosi 4 mg/glim 1 mg
Avandaryl 4/2: rosi 4 mg/glim 2 mg
Avandaryl 4/4: rosi 4 mg/glim 4 mg
Type 2 Diabetes Mellitus  ■  427

Avandaryl 8/2: rosi 8 mg/glim 2 mg
Avandaryl 8/4: rosi 8 mg/glim 4 mg

GLUCAGON-LIKE PEPTIDE-1 (GLP-1) RECEPTOR AGONISTS

Comment: GLP-1 receptor agonists act as an agonist at the GLP-1 receptors. They have a longer half-life than the native protein allowing them to be dosed once daily. They increase intracellular cAMP resulting in insulin release in the presence of increased serum concentration, decrease glucagon secretion, and delay gastric emptying, thus, reducing fasting, premeal, and post-prandial glucose throughout the day. GLP-1 receptor agonists are not a substitute for insulin, not for treatment of DKA, and not for post-prandial administration.

➤ albiglutide (C) administer by SC injection into the upper arm, abdomen, or thigh once daily; initially 30 mg once weekly on the same day; may increase to max 50 mg once weekly
  Pediatric: <18 years: not established
  Tanzeum Prefilled pen/syringe: 30, 50 mg/pen pwdr for injection after reconstitution (4/pck) (preservative-free)

➤ dulaglutide (C) administer by SC injection into the upper arm, abdomen, or thigh once daily; initially 0.6 mg/day for 1 week; then 1.2 mg/day; may increase to max 1.8 mg/day; if more than 3 days since last dose, restart at 0.6 mg/day and titrate as before
  Pediatric: <18 years: not established
  Trulicity Prefilled pen/syringe: 0.75, 1.5 mg/0.5 ml single-dose (4/pck)

➤ exenatide (C) administer by SC injection into the upper arm, abdomen, or thigh
  Pediatric: not recommended
  Bydureon administer 2 mg weekly (every 7 days); inject immediately after mixing; if changing from Byetta, discontinue and start Vial: 2 mg pwdr for reconstitution (1 vial pwdr and 1 syringe prefilled w. diluents, vial connector, and needles, 4/pck)
  Byetta inject within 60 minutes before AM and PM meals; initially 5 mcg/dose; may increase to 10 mcg/dose after one month
  Prefilled pen: 250 mcg/ml (5, 10 mcg/dose; 60 doses, needles not included)
    (m-cresol, mannitol)

➤ liraglutide (C) administer by SC injection into the upper arm, abdomen, or thigh once daily; initially 0.6 mg/day for 1 week; then 1.2 mg/day; may increase to 1.8 mg/day
  Pediatric: <18 years: not recommended
  Victoza Prefilled pen: 6 mg/ml (3 ml; needles not included)

SODIUM-GLUCOSE CO-TRANSPORTER 2 (SGLT2) INHIBITORS

Comment: SGLT2 inhibitors block the SGLT2 protein involved in 90% of glucose reabsorption in the proximal renal tubule, resulting in increased renal glucose excretion (typically >2000 mg/dL), and lower blood glucose levels (low risk of hypoglycemia), modest weight loss, and mild reduction in blood pressure (probably due to sodium loss). These agents probably also increase insulin sensitivity, decrease gluconeogenesis, and improve insulin release from pancreatic beta cells. SGLT2 inhibitors are contraindicated in T1DM, and are decreased or contraindicated with decreased eGFR, increased Scr, renal failure, ESRD, renal dialysis, metabolic acidosis, or diabetic ketoacidosis. The most common side effects are UTI, female genital mycotic infection, and increased urination. These effects may be managed with
adequate hydration and genital hygiene. The SGLT2 inhibitors are not recommended in nursing women. There is potential for a hypersensitivity reaction to include angioedema and anaphylaxis. Caution with SGLT2 use due to reports of increased risk of treatment-emergent bone fractures.

- **canagliflozin (C)** take one tab before the first meal of the day; initially 100 mg; may titrate up to max 300 mg once daily; *eGFR <45: do not initiate*
  
  **Pediatric:** <18 years: not established
  
  **Invokana Tab:** 100, 300 mg
  
  **Comment:** Invokana is contraindicated with eGFR <45; If eGFR 45-≤60, max 100 mg once daily or consider other antihyperglycemic

- **dapagliflozin (C)** take one tab before the first meal of the day; initially 5 mg; may increase to max 10 mg once daily
  
  **Pediatric:** <18 years: not established
  
  **Farxiga Tab:** 5, 10 mg
  
  **Comment:** Farxiga is contraindicated with eGFR <60.

- **empagliflozin (C)** take one tab before the first meal of the day; initially 10 mg; may increase to max 25 mg once daily
  
  **Pediatric:** <18 years: not established
  
  **Jardiance Tab:** 10, 25 mg
  
  **Comment:** Jardiance is contraindicated with eGFR <45.

### SODIUM-GLUCOSE CO-TRANSPORTER 2 (SGLT2) INHIBITOR/BIGUANIDE COMBINATIONS

Comment: Caution with SGLT2 use due to reports of increased risk of treatment-emergent bone fractures. *metformin* is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

- **canagliflozin/metformin (C)** take 1 dose twice daily with meals; max daily dose 300/2000; *eGFR 45-≤60: canagliflozin max 100 mg once daily or consider other antihyperglycemic; eGFR <45: do not initiate*
  
  **Pediatric:** <18 years: not established
  
  **Invokamet**
  
  **Tab:** Invokanamet 50/500: cana 50 mg/met 500 mg
  
  Invokanamet 50/1000: cana 50 mg/met 1000 mg
  
  Invokanamet 150/500: cana 150 mg/met 500 mg
  
  Invokanamet 150/1000: cana 150 mg/met 1000 mg

- **dapagliflozin/metformin (C)** swall whole; do not crush or chew; take once daily first meal of the day; max daily dose 10/2000
  
  **Pediatric:** <18 years: not established
  
  **Xigduo XR**
  
  **Tab:** Xigduo XR 5/500: dapa 5 mg/met 500 mg ext-rel
  
  Xigduo XR 5/1000: dapa 5 mg/met 1000 mg ext-rel
  
  Xigduo XR 10/500: dapa 10 mg/met 500 mg ext-rel
  
  Xigduo XR 10/1000: dapa 10 mg/met 1000 mg ext-rel
  
  **Comment:** Xigduo is contraindicated with eGFR <60, SCr >1.5 (men), or SCr >1.4 (women)

- **empagliflozin/metforman (C)** take 1 dose twice daily with meals; max daily dose 25/2000
Type 2 Diabetes Mellitus ■ 429

**Type 2 Diabetes Mellitus**

**Pediatric:** <18 years: not established

**Synjardy**  
*Tab:* Synjardy 5/500: invo 5 mg/met 500 mg  
Synjardy 5/1000: invo 5 mg/met 1000 mg  
Synjardy 12.5/500: invo 12.5 mg/met 500 mg  
Synjardy 12.5/1000: invo 12.5 mg/met 1000 mg  
*Comment:* Synjardy is contraindicated with eGFR <45, SCr >1.5 (men), or SCr >1.4 (women).

**SODIUM-GLUCOSE CO-TRANSPORTER 2 (SGLT2) INHIBITOR/DIPEPTIDYL PEPTIDASE-4 (DPP-4) INHIBITOR COMBINATION**

*Comment:* Caution with SGLT2 use due to reports of increased risk of treatment-emergent bone fractures.

- **empagliflozin/linagliptin (C)** initially 10/5 once daily with the first meal of the day; max daily dose 25/5  
  *Pediatric:* <18 years: not established
  
  **Glyxambi**  
  *Tab:* Glyxambi 10/5: empa 10 mg/lina 5 mg  
  Glyxambi 25/5: empa 25 mg/lina 5 mg  
  *Comment:* Glyxambi is contraindicated with eGFR <45.

**DIPEPTIDYL PEPTIDASE-4 (DPP-4) INHIBITOR**

*Comment:* DPP-4 is an enzyme that degrades incretin hormones glucagon-like peptide-1 (GLP-1) and glucose-dependent insulino-tropic polypeptide (GIP). Thus, DPP-4 inhibitors increase the concentration of active incretin hormones, stimulating the release of insulin in a glucose-dependent manner and decreasing the levels of circulating glucagon. The FDA has reported that saxagliptin- and alogliptin-containing drugs may increase the risk of heart failure, especially in patients who already have cardiovascular or renal disease. Drugs in this risk group include Nesina (alogliptin) and Onglyza (saxagliptin)

- **alogliptin (B)** take twice daily with meals; max 25 mg/day  
  *Pediatric:* <18 years: not recommended
  
  **Nesina** *Tab:* 6.25, 12.5, 25 mg

- **linagliptin (B)** 5 mg once daily  
  *Pediatric:* <18 years: not recommended
  
  **Tradjenta** *Tab:* 5 mg

- **saxagliptin (B)** 2.5-5 mg once daily  
  *Pediatric:* <18 years: not recommended
  
  **Onglyza** *Tab:* 2.5, 5 mg

- **sitagliptin (B)** as monotherapy or as combination therapy with metformin or a TZD  
  *Pediatric:* <18 years: not recommended
  
  **Januvia** 25-100 mg once daily  
  *Tab:* 25, 50, 100 mg

**DIPEPTIDYL PEPTIDASE-4 (DPP-4) INHIBITOR/BIGUANIDE COMBINATIONS**

*Comment:* DPP-4 inhibitor/metformin combinations are contraindicated with renal impairment (men: SCr ≥1.5 mg/dL; women: SCr ≥1.4 mg/dL) or abnormal CrCl,
metabolic acidosis, ketoacidosis, or history of angioedema. Temporarily suspend for surgery or IV administered iodinated contrast agents. Avoid in the elderly, malnourished, dehydrated, or with clinical or lab evidence of hepatic disease. For other DPP-4 and/or metformin precautions, see mfr pkg insert. The FDA has reported that saxagliptin- and alogliptin-containing drugs may increase the risk of heart failure, especially in patients who already have cardiovascular or renal disease. These drugs include: Onglyza (saxagliptin), Kombiglyze XR (saxagliptin/metformin), Nesina (alogliptin), Kazano (alogliptin/metformin), and Oseni (alogliptin/pioglitazone).

a) alogliptin/metformin (B) take twice daily with meals; max alogliptin 25 mg/day, max metformin 2000 mg/day
Pediatric: <18 years: not recommended
Kazano
Tab: Kazano 12.5/500: algo 12.5 mg/met 500 mg
Kazano 2.5/1000: algo 12.5 mg/met 1000 mg

linagliptin/metformin (B) take twice daily with meals; max linagliptin 5 mg/day, max metformin 2000 mg/day
Pediatric: <18 years: not recommended
Jentadueto
Tab: Jentadueto 2.5/500: lina 2.5 mg/met 500 mg
Jentadueto 2.5/850: lina 2.5 mg/met 850 mg
Jentadueto 2.5/1000: lina 2.5 mg/met 1000 mg

saxagliptin/metformin (B) take once daily with meals; max saxagliptin 5 mg/day, max metformin 2000 mg/day
Pediatric: <18 years: not recommended
Kombiglyze XR
Tab: Kombiglyze XR 5/500: saxa 5 mg/met 500 mg
Kombiglyze XR 2.5/1000: saxa 2.5 mg/met 1000 mg
Kombiglyze XR 5/1000: saxa 5 mg/met 1000 mg
Comment: The FDA has reported that saxagliptin-containing drugs may increase the risk of heart failure, especially in patients who already have cardiovascular or renal disease. The drug Kombiglyze XR (saxagliptin/metformin) is in this risk group. metformin is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

sitagliptin/metformin (B) take twice daily with meals; max sitagliptin 100 mg/day, max metformin 2000 mg/day
Pediatric: <18 years: not recommended
Janumet
Tab: Janumet 50/500: sita 50 mg/met 500 mg
Janumet 50/1000: sita 50 mg/met 1000 mg
Janumet XR
Tab: Janumet XR 50/500: sita 50 mg/met 500 mg ext-rel
Janumet XR 50/1000: sita 50 mg/met 1000 mg ext-rel
Janumet XR 100/1000: sita 100 mg/met 1000 mg ext-rel
Comment: metformin is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

MEGLITINIDE/BIGUANIDE COMBINATION

repaglinide/metformin (C)(G) take in 2-3 divided doses within 30 minutes before food; max 4/1000 per meal and 10/2000 per day
Typhoid Fever (Salmonella Typhi) ■ 431

Pediatric: not recommended

**Prandimet**

Tab: Prandimet 1/500: repa 1 mg/met 500 mg
Prandimet 2/500: repa 2 mg/met 500 mg

**Comment:** metformin is contraindicated with renal impairment, metabolic acidosis, ketoacidosis. Suspend metformin, prior to, and for 48 hours after, surgery or receiving IV iodinated contrast agents.

**DIPEPTIDYL PEPTIDASE-4 (DPP-4) INHIBITOR/HMG-COA REDUCTASE INHIBITOR COMBINATION**

- **sitagliptin/simvastatin** (B) take once daily in the PM; swallow whole; adjust dose if needed after 4 weeks; **Concomitant** verapamil or diltiazem: max 100/10 once daily; Concomitant amiodarone, amiodipine, or ranolazine: max 100/20 once daily; Homogenous familial hypercholesterolemia: max 100/40 once daily; Chinese patients taking lipid-modifying doses (>1 g/day niacin) of niacin-containing products: caution with 100/40 dose; increase risk of myopathy

Pediatric: <18 years: not recommended

**Juvisync**

Tab: Juvisync 100/10: sita 100 mg/simva 10 mg
Juvisync 100/20: sita 100 mg/simva 20 mg
Juvisync 100/40: sita 100 mg/simva 40 mg

**DOPAMINE RECEPTOR AGONIST**

- **bromocriptine mesylate** (B) take with food in the morning within 2 hours of waking; initially 0.8 mg once daily; may increase by 0.8 mg/ week; max 4.8 mg/week; **Severe psychotic disorders:** not recommended

Pediatric: not recommended

**Cycloset Tab:** 0.8 mg

**Comment:** Cycloset is an adjunct to diet and exercise to improve glycemic control. Contraindicated with syncopal migraines, nursing mothers, and other ergot-related drugs.

**Bile Acid Sequestrant**

- **colesevelam** (B) Monotherapy: 3 tabs bid or 6 tabs once daily or one 1.875 g pkt bid or one 3.75 g pkt once daily

Pediatric: not recommended

**WelChol Tab:** 625 mg; Pwdr for oral susp: 1.875 g pwdr pkts (60/carton); 3.75 g pwdr pkts (30/carton) (citrus; phenylalanine)

**Comment:** colesevelam (WelChol) is indicated as an adjunctive therapy to improve glycemic control in adults with type 2 diabetes. It can be added to metformin, sulfonylureas, or insulin alone or in combination with other antidiabetic agents

**TYPHOID FEVER (SALMONELLA TYPHI)**

**PRE-EXPOSURE PROPHYLAXIS**

- **typhoid** vaccine, oral, live, attenuated strain

©Springer Publishing Company
Typhoid Fever (Salmonella Typhi)

**Vivotif Berna** 1 cap every other day, 1 hour before a meal, with a lukewarm (not > body temperature) or cold drink for a total of 4 doses; do not crush or chew; complete therapy at least 1 week prior to expected exposure; re-immunization recommended every 5 years if repeated exposure

*Pediatric:* <6 years: not recommended; ≥6 years: same as adult

*Cap:* ent-coat

- **typhoid Vi polysaccharide vaccine (C)**
  - Typhim Vi 0.5 ml IM in deltoid; re-immunization recommended every 2 years if repeated exposure
    - *Pediatric:* <2 years: not recommended; ≥2 years: same as adult
    - *Vial:* 20, 50 dose; *Prefilled syringe:* 0.5 ml
  
  **Comment:** Febrile illness may require delaying administration of the vaccine; have epinephrine 1:1000 readily available.

**TREATMENT**

- **azithromycin (B)** 8-10 mg/kg/day; *Mild Illness:* treat x 7 days; *Severe Illness:* treat x 14 days
  
  *Pediatric:* 8-10 mg/kg/day; max 500 mg/day; *Mild Illness:* treat x 7 days; *Severe Illness:* treat x 14 days; see page 548 for dose by weight
  
  Zithromax *Tab:* 250, 500, 600 mg; *Oral susp:* 100 mg/5 ml (15 ml); 200 mg/5 ml (15, 22.5, 30 ml) (cherry); *Pkt:* 1 g for reconstitution (cherry-banana)
  
  Zithromax Tri-pak *Tab:* 3 x 500 mg tabs/pck
  
  Zithromax Z-pak *Tab:* 6 x 250 mg tabs/pck
  
  Zmax *Oral susp:* 2 g ext-rel for reconstitution (cherry-banana) (148 mg Na+)

- **cefixime (B)** *Mild Illness:* 15-20 mg/kg/day x 7-14 days; *Severe Illness:* 20 mg/kg/day x 10-14 days
  
  *Pediatric:* <6 months: not recommended; 6 months-12 years, <50 kg: *Mild Illness:* 15-20 mg/kg/day x 7-14 days; *Severe Illness:* 20 mg/kg/day x 10-14 >50 kg: same as adult; see page 552 for dose by weight
  
  Suprax *Tab:* 400 mg; *Cap:* 400 mg; *Oral susp:* 100, 200 mg/5 ml (50, 75, 100 ml) (strawberry)

- **ciprofloxacin (C)** 15 mg/kg/day; *Mild Illness:* treat x 5-7 days; *Severe Illness:* treat x 10-14 days
  
  *Pediatric:* <18 years: not recommended
  
  Cipro (G) *Tab:* 250, 500, 750 mg; *Oral susp:* 250, 500 mg/5 ml (100 ml) (strawberry)
  
  Cipro XR *Tab:* 500, 1000 mg ext-rel
  
  ProQuin XR *Tab:* 500 mg ext-rel
  
  **Comment:** ciprofloxacin is contraindicated <18 years-of-age, and during pregnancy and lactation. Risk of tendonitis or tendon rupture, especially 60 years-of-age and older.

- **ofloxacin (C)** 15 mg/kg/day; *Mild Illness:* treat x 5-7 days; *Severe Illness:* treat x 10-14 days
  
  *Pediatric:* <18 years: not recommended
  
  Floxin *Tab:* 200, 300, 400 mg
  
  **Comment:** ofloxacin is contraindicated <18 years-of-age, and during pregnancy and lactation. Risk of tendonitis or tendon rupture, especially 60 years-of-age and older.