SPRINGER PUBLISHING

THE APRN AND PA'S COMPLETE GUIDE TO

PRESCRIBING DRUG THERAPY 2022

MARI J. WIRFS

The APRN and PA's Complete Guide to Prescribing Drug Therapy

2022

Mari J. Wirfs, PhD, MN, RN, APRN, ANP-BC, FNP-BC, CNE, began her career with an ASN (1968, Dekalb College), and subsequently completed a BSN (1970, Georgia State University), MS (1975, Emory University), Post-Masters Certificates in Primary Care of the Adult (1997) and Family (1997, LSU Health Sciences Center), and PhD in Higher Education Administration and Leadership (1991, University of New Orleans). She is a nationally certified Adult Nurse Practitioner (1997, American Nurses Credentialing Center), Family Nurse Practitioner (1998, American Academy of Nurse Practitioners), and Certified Nurse Educator (2008, National League for Nursing). Her career spans 50+ years inclusive of collegiate undergraduate and graduate nursing education and clinical practice in critical care, pediatrics, psychiatric–mental health nursing, and advanced practice primary care nursing. During her academic career, she has achieved the rank of professor with tenure in two university systems.

Dr. Wirfs was a founding member of the medical staff in the establishment of Baptist Community Health Services, a community-based nonprofit primary care clinic founded post-hurricane Katrina in the New Orleans Lower Ninth Ward. Since 2002, Dr. Wirfs has served as clinical director and primary care provider at the Family Health Care Clinic, serving faculty, staff, students, and their families at New Orleans Baptist Theological Seminary (NOBTS). She is also adjunct graduate faculty, teaching neuropsychology and psychopharmacology, in the NOBTS Guidance and Counseling program. She is a long-time member of the National Organization of Nurse Practitioner Faculties (NONPF), Sigma Theta Tau International Honor Society of Nursing, and several other academic honor societies.

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 year reserve service in the US Army Nurse Corps. Her publications include co-authored family primary care certification review books and study materials. Her first prescribing guide, *Clinical Guide to Pharmacotherapeutics for the Primary Care Provider,* was published by Advanced Practice Education Associates (APEA) from 1999 to 2014. ***The APRN's Complete Guide to Prescribing Drug Therapy*** (launched in 2016), ***The APRN's Complete Guide to Prescribing Pediatric Drug Therapy*** (launched in 2017), and ***The PA's Complete Guide to Prescribing Drug Therapy*** (launched in 2017) are published by Springer Publishing Company.

The APRN's Complete Guide to Prescribing Pediatric Drug Therapy 2018 was awarded second place, **Book of the Year 2017** in the Child Health Category, by the ***American Journal of Nursing (AJN)***, official publication of the **American Nurses Association (ANA).** The panel of judges included the co-founder of the nurse practitioner role and first nurse practitioner program, Dr. Loretta C. Ford, Professor Emerita. Dr. Wirfs was the recipient of the **2018 AANP Nurse Practitioner State Award for Excellence from Louisiana** by the **American Association of Nurse Practitioners (AANP)**.

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Springer Publishing Company, LLC
11 West 42nd Street
New York, NY 10036
www.springerpub.com

Acquisitions Editor: Rachel X. Landes
Composition: Exeter Premedia Services Private Ltd.

ISBN: 978-0-8261-8551-8
e-book ISBN: 978-0-8261-8549-5
DOI: 10.1891/9780826185495

21 22 23 24 / 5 4 3 2 1

This book is a quick reference for healthcare providers practicing in primary care settings. The information has been extrapolated from a variety of professional sources and is presented in condensed and summary form. It is not intended to replace or substitute for complete and current manufacturer prescribing information, current research, or knowledge and experience of the user. For complete prescribing information, including toxicities, drug interactions, contraindications, and precautions, the reader is directed to the manufacturer's package insert and the published literature. The inclusion of a particular brand name neither implies nor suggests that the author or publisher advises or recommends the use of that particular product or considers it superior to similar products available by other brand names. Neither the author nor the publisher makes any warranty, expressed or implied, with respect to the information, including any errors or omissions, herein.

Library of Congress Cataloging-in-Publication Data
Names: Wirfs, Mari J., author.
Title: The APRN and PA's complete guide to prescribing drug therapy 2020 / Mari J. Wirfs.
Description: New York, NY: Springer Publishing Company, LLC, [2020] | Includes bibliographical references and index.
Identifiers: LCCN 2017008900| ISBN 9780826179333 | ISBN 9780826179340 (ebook)
Subjects: | MESH: Drug Therapy—nursing | Advanced Practice Nursing—methods | Handbooks
Classification: LCC RM301 | NLM WY 49 | DDC 615.1—dc23
LC record available at https://lccn.loc.gov/2017008900

Printed in the United States of America.

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PREFACE

The APRN and PA's Complete Guide to Prescribing Drug Therapy 2022 is a prescribing reference intended for use by healthcare providers in all clinical practice settings who are involved in the primary care management of patients with acute, episodic, and chronic health problems and needs for health promotion and disease prevention. 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. If pediatric indications for a drug have not been established or a drug is not recommended for a pediatric subgroup, this information is noted accordingly.

This reference is divided into two major sections. **Section I** presents drug treatment regimens for over 600 clinical diagnoses. Each drug is listed alphabetically by generic name, followed by: FDA pregnancy category (A, B, C, D, X); over-the-counter availability (OTC); DEA schedule (I, II, III, IV, V); generic availability (G); dosing regimens; brand/trade name(s); dose forms; whether tablets, caplets, or chew tabs are single scored (*), cross-scored (**), or tri-scored (***); flavors of chewable, sublingual, buccal, and liquid forms; and information regarding additives (i.e., dye-free, sugar-free, preservative-free or preservative type, alcohol-free or alcohol content). Non-pharmaceutical products and drugs that received initial FDA approval on or after June 30, 2015, do not have an FDA pregnancy letter designation. For information regarding special populations, including pregnant and breastfeeding females, refer to the manufacturer's package insert or visit https://www.accessdata.fda.gov/scripts/cder/daf/ to view the product label online. Visit https://www.drugs.com/pregnancy-categories.html to view the FDA Pregnancy and Lactation Labeling Final Rule (PLLR) and new label format.

Section II presents clinically useful information organized in table format, including: the JNC-8 and ASH recommendations for hypertension management, childhood immunization recommendations, brand/trade name drugs (with contents) for the management of common respiratory symptoms, anti-infectives by classification, pediatric dosing by weight for liquid forms, glucocorticosteroids 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/trade name, with FDA pregnancy category and controlled drug schedule, facilitates quick identification of drugs by alternate names and page location(s).

Selected diseases and diagnoses (e.g., angina, ADHD, growth failure, glaucoma, Parkinson's disease, multiple sclerosis, cystic fibrosis) and selected drugs (e.g., antineoplastics, antipsychotics, antiarrhythmics, anti-HIV drugs, anticoagulants) are included because patients are frequently referred to primary care providers by specialists for follow-up monitoring and on-going management. Further, the shifting healthcare paradigm is such that with expanding roles and patient empowerment through education, initial diagnosis and initiation of treatment is increasing in primary care with measurable increases in access to quality healthcare and improved patient self-care. Several diseases are included that may not be prevalent in North America but have been identified in other parts of the world. Endemic diseases for which there is no FDA-approved drug treatment are also included with known transmission and treatment interventions. Accordingly, this guide serves primary care providers internationally. Today's healthcare providers are in an era of rapidly expanding knowledge in the field of genomics, and thus, each new edition of this prescribing guide contains new drug classes and new FDA-approved drugs.

For quick reference to pediatric weight-based dosing of a drug, the user is directed to the dose-by-weight table for that drug in the appendices. Potential safe, efficacious, prescribing and monitoring of drug therapy regimens requires adequate knowledge about (a) the pharmacodynamics and pharmacokinetics of drugs, (b) concomitant therapies, and (c) individual characteristics of the patient (e.g., age, weight, current and past medical history, physical examination findings, hepatic and renal function, and co-morbidities, and risk factors). 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, potential adverse reactions, and appropriate patient-centered care.

ACKNOWLEDGMENTS

This publication, which we consider to be a "must have" for students, academicians, and practicing clinicians represents the culmination of Springer Publishing Company's collaborative team effort. The production team at Exeter Premedia Services, on behalf of Springer Publishing Company, managed the complex files as content was updated and cross-referenced for the final product. The work of 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 healthcare community worldwide for supporting the end goal of quality healthcare for all people.

Sincerely, Dr. Mari J. Wirfs

ACE-Is and **ARBs** are contraindicated in the 2nd and 3rd trimesters of pregnancy. Addition of a daily ACE-I or ARB is strongly recommended for renal protection in patients with hypertension and/or diabetes. The "ACE inhibitor cough," a dry cough, is an adverse side effect produced by an accumulation of bradykinins that occurs in 5% to 10% of the population and resolves within days of discontinuing the drug.

Alcohol is contraindicated with concomitant **narcotic analgesics, benzodiazepines, SSRIs, antihistamines, TCAs,** and other sedating agents due to risk of over-sedation.

Alpha-1 blockers have a potential adverse side effect of sudden hypotension, especially with first dose. Alert the patient regarding this "first-dose effect" and recommend the patient sit or lie down to take the first dose. Usually start at lowest dose and titrate upward.

Antidepressant monotherapy should be avoided until any presence of (hypo) mania or positive family history for bipolar spectrum disorder has been ruled out as antidepressant monotherapy can induce mania in the bipolar patient.

For patients 65 years-of-age and older, consult the **May 2017 Beers Criteria** for Potentially Inappropriate Medication (PIM) Use in Older Adults, to help improve the safety of prescribing medications for older adults, presented in table format at:
https://www.priorityhealth.com/provider/clinical-resources/medication-resources/~/media/documents/pharmacy/cms-high-risk-medications.pdf

Aspirin is contraindicated in children and adolescents with *Varicella* or other viral illness, and 3rd trimester of pregnancy.

Beta-blockers, by all routes of administration, are generally contraindicated in severe COPD, history of or current bronchial asthma, sinus bradycardia, and 2nd or 3rd degree AV block. Use a cardio-specific beta blocker where appropriate in these cases.

A **biosimilar** product is one that has been FDA-approved based on data demonstrating that it is highly similar to a previously FDA-approved biological product, known as the reference product. Accordingly, the FDA has determined that there are no clinically meaningful differences between the biosimilar product and the reference product (e.g., **Cyltezo** [***adalimumab-adbm***] is biosimilar to **Humira** [***adalimumab***]). A biosimilar product has been demonstrated for the condition(s) of use (e.g. indication(s), dosing regimen(s)), strength(s), dosage form(s), and route(s) of administration described in its full prescribing information in the manufacturer's package insert.

The FDA **Breakthrough Therapy Designation (BTD)** is intended to expedite the development and review of a drug candidate that is planned for use, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition when preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints. The benefits of Breakthrough Therapy Designation include the same benefits as Fast Track Designation (FTD), plus an organizational commitment involving the FDA's senior managers with more intensive guidance from the FDA (e.g., ***Zulresso [brexanolone]***) received the FDA Breakthrough Therapy Designation for treatment of post-partum depression.

Calcium channel blockers may cause the adverse side effect of pedal edema (feet, ankles, lower legs) that resolves with discontinuation of the drug.

Codeine is known to be excreted in breast milk: <12 years, not recommended; 12-<18, use extreme caution; not recommended for children and adolescents with asthma or other chronic breathing problem. The FDA and the European Medicines Agency (EMA) are investigating the safety of using ***codeine***-containing medications to treat pain, cough, and colds in children 12-<18 years because of the potential for serious side effects, including slowed or difficult breathing.

Check **drug interactions** at https://www.drugs.com/drug_interactions.php

Check FDA **drug recalls, market withdrawals, and safety alerts** (http://www.fda.gov/Safety/Recalls/default.htm).

Contraceptives that are estrogen-progesterone combinations and **progesterone-only** are contraindicated in pregnancy (pregnancy category X).

Corticosteroids increase blood sugar in patients with diabetes and decrease immunity; therefore, consider risk versus benefit in susceptible patients, use lowest effective dose, and taper gradually to discontinue.

Diclofenac is contraindicated with ***aspirin*** allergy and, as with all other NSAIDs, should be avoided in late pregnancy (≥30 weeks) because it may cause premature closure of the ductus arteriosus.

Erythromycin may increase INR with concomitant warfarin, as well as increase serum level of digoxin, benzodiazepines, and statins.

Finasteride, a 5-alpha reductase inhibitor, is associated with low but increased risk of high-grade prostate cancer. Pregnant females should not touch broken tablets.

Fluoroquinolones and **quinolones** are contraindicated <18 years-of-age, pregnancy, and breastfeeding. *Exception:* in the case of anthrax, ***ciprofloxacin*** is indicated for patients <18 years-of-age and dosed based on mg/kg body weight. Risk of tendonitis or tendon rupture (ex: ***ciprofloxacin***, ***gemifloxacin***, ***levofloxacin***, ***moxifloxacin***, ***norfloxacin***, ***ofloxacin***).

Fluoroquinolones can increase the risk of aortic dissection or aortic aneurysm rupture and should not be used in patients at increased risk (including patients with peripheral artery disease, hypertension, Marfan syndrome, Ehlers-Danlos syndrome, and older adults) unless there is no other available treatment option.

The U.S. Preventive Services Task Force (USPSTF) recommends against using **hormone replacement therapy** (**HRT**) for primary prevention of chronic conditions among post-menopausal women. The harms associated with combined use of estrogen and a progestin, such as increased risks of invasive breast cancer, venous thromboembolism, and coronary heart disease, far outweigh the benefits.

Ibuprofen is contraindicated in children <6 months of age and in the 3rd trimester of pregnancy.

Live vaccines are contraindicated in patients who are immunosuppressed or receiving immunosuppressive therapy, including immunosuppressive levels of corticosteroid therapy.

Metronidazole and ***tinidazole*** are contraindicated in the 1st trimester of pregnancy. Alcohol

is contraindicated during treatment with oral forms and for 72 hours after therapy due to a possible ***disulfiram***-like reaction (nausea, vomiting, flushing, headache).

When prescribing **opioid analgesics**, presumptive urine **drug testing** (UDT) should be performed when opioid therapy for chronic pain is initiated, along with subsequent use as adherence monitoring, using in-office point of service testing to identify patients who are non-compliant or abusing prescription drugs or illicit drugs. American Society of Interventional Pain Physicians (ASIPP)

Orphan Drug designation means the drug is a first-in-class and/or the drug is for treatment of a rare disease and/or the drug is a first and only treatment for a disease and the application for FDA approval has received priority review as incentive to assist and encourage the development of drugs for rare diseases.

Oral **PDE5 inhibitors** are contraindicated in patients taking nitrates due to risk of hypotension or syncope (ex: ***avanafil***, ***sildenafil***, ***tadalafil***, ***vardenafil***).

Chronic long-term **proton pump inhibitor (PPI)** use carries a risk to renal function (consider risk-benefit and alternative treatment). PPIs should be discontinued, and should not be initiated, in patients with acute kidney injury (AKI) and chronic kidney disease (CKD).

Statins are strongly recommended as adjunctive therapy for patients with diabetes, with **or** without abnormal lipids.

Sulfonamides (ex: ***sulfamethoxazole, trimethoprim***) are not recommended in pregnancy or lactation. CrCl 15-30 mL/min: reduce dose by 1/2; CrCl <15 mL/min: not recommended. Contraindicated with G6PD deficiency. A high fluid intake is indicated during sulfonamide therapy to avoid crystallization in the kidneys.

Tetracyclines are contraindicated in children <8 years-of-age, pregnancy, and breastfeeding (discolors developing tooth enamel). A side effect may be photo-sensitivity (photophobia). Do not take with antacids, calcium supplements, milk or other dairy, or within 2 hours of taking another drug (ex: ***doxycycline***, ***minocycline***).

Tramadol is known to be excreted in breast milk. The FDA and the European Medicines Agency (EMA) are investigating the safety of using ***tramadol***-containing medications to treat pain in children 12-18 years because of the potential for serious side effects, including slowed or difficult breathing.

The **Transmucosal Immediate Release Fentanyl (TIRF) Risk Evaluation and Mitigation Strategy (REMS)** program is an FDA-required program designed to ensure informed risk-benefit decisions before initiating treatment, and while patients are treated to ensure appropriate use of TIRF medicines. The purpose of the TIRF REMS Access program is to mitigate the risk of misuse, abuse, addiction, overdose, and serious complications due to medication errors with the use of TIRF medicines. You must enroll in the TIRF REMS Access program to prescribe, dispense, **or** distribute TIRF medicines. To register, call the TIRF REMS Access program at 1-866-822-1483 **or** register online at https://www.tirfremsaccess.com/TirfUI/rems/home.action

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SECTION I

DRUG THERAPY BY CLINICAL DIAGNOSIS

ACETAMINOPHEN OVERDOSE

ANTIDOTE/CHELATING AGENT

- ***acetylcysteine*** **(B)(G)** *Loading Dose:* 150 mg/kg administered over 15 minutes; *Maintenance:* 50 mg/kg administered over 4 hours; then 100 mg/kg administered over 16 hours
  Pediatric: same as adult
  Acetadote *Vial: soln for IV infusion after dilution:* 200 mg/ml (30 ml; dilute in D_5W (preservative-free)
  Comment: ***Acetaminophen*** overdose is a medical emergency due to the risk of irreversible hepatic injury. An IV infusion of ***acetylcysteine*** should be started as soon as possible and within 24 hours if the exact time of ingestion is unknown. Use a serum ***acetaminophen*** nomogram to determine need for treatment. Extreme caution is needed if used with concomitant hepatotoxic drugs.

ACNE ROSACEA

Comment: All acne rosacea products should be applied sparingly to clean, dry skin as directed. Avoid use of topical corticosteroids.

- ***ivermectin*** **(C)(G)** apply bid
  Soolantra *Crm:* 1% (30 gm)
  Comment: **Soolantra** is a macrocyclic lactone. Exactly how it works to treat rosacea is unknown.

TOPICAL ALPHA-1A ADRENOCEPTOR AGONIST

- ***oxymetazoline hcl*** **(B)** apply a pea-sized amount once daily in a thin layer covering the entire face (forehead, nose, cheeks, and chin) avoiding the eyes and lips; wash hands immediately
  Pediatric: <18 years: not recommended; ≥18 years: same as adult
  Rhofade *Crm* 1% (30 gm tube)
  Comment: **Rhofade** acts as a vasoconstrictor. Use with caution in patients with cerebral or coronary insufficiency, Raynaud's phenomenon, thromboangiitis obliterans, scleroderma, or Sjögren's syndrome. **Rhofade** may increase the risk of angle closure glaucoma in patients with narrow-angle glaucoma. Advise patients to seek immediate medical care if signs and symptoms of potentiation of vascular insufficiency or acute angle closure glaucoma develop.

TOPICAL ALPHA-2 AGONIST

- ***brimonidine*** **(B)** apply to affected area once daily
  Pediatric: <18 years: not recommended; ≥18 years: same as adult
  Mirvaso
  Gel: 0.33% (30, 45 gm tube; 30 gm pump)
  Comment: **Mirvaso** is indicated for persistent erythema; ***brimonidine*** constricts dilated facial blood vessels to reduce redness.

TOPICAL ANTIMICROBIALS

- ***azelaic acid*** **(B)(G)** apply to affected area bid
  Azelex *Crm:* 20% (30, 50 gm)
  Finacea *Gel:* 15% (30 gm); *Foam:* 15% (50 gm)
- ***metronidazole*** **(B)** apply to clean dry skin
  MetroCream apply bid
  Emol crm: 0.75% (45 gm)
  MetroGel apply once daily
  Gel: 1% (60 gm tube; 55 gm pump)
  MetroLotion apply bid
  Lotn: 0.75% (2 oz)

➢ ***minocycline*** topical foam apply to affected areas once daily; gently rub into the skin
Pediatric: <9 years: not recommended; ≥9 years: same as adult
Amzeeq *Aerosol can:* 4% (30 gm)
Comment: **Amzeeq** ***(minocycline)*** is a tetracycline-class drug indicated to treat inflammatory lesions of non-nodular moderate-to-severe acne vulgaris in patients >9 years-of-age. The propellant in **Amzeeq** is flammable. Instruct the patient to avoid fire, flame, and smoking during and immediately following application. Use of tetracycline-class of drugs orally during the second and third trimesters of pregnancy, infancy and childhood up to the age of 8 years may cause permanent discoloration of the teeth (yellow-gray-brown) and reversible inhibition of bone growth. If *Clostridium difficile*-associated diarrhea occurs, discontinue **Amzeeq**. If liver injury is suspected, discontinue **Amzeeq**. Patients who are on anticoagulant therapy may require downward adjustment of their anticoagulant dosage. Avoid co-administration with penicillins. **Amzeeq** may cause fetal harm when when used during pregnancy. Breastfeeding is not recommended while using **Amzeeq**.

➢ ***sodium sulfacetamide*** **(C)(G)** apply 1-3 x daily
Klaron *Lotn:* 10% (2 oz)

➢ ***sodium sulfacetamide+sulfur*** **(C)**
Clenia Emollient Cream apply 1-3 x daily
Wash: sod sulfa 10%+sulfur 5% (10 oz)
Clenia Foaming Wash wash affected area once or twice daily
Wash: sod sulfa 10%+sulfur 5% (6, 12 oz)
Rosula Gel apply 1-3 x daily
Gel: sod sulfa 10%+sulfur 5% (45 ml)
Rosula Lotion apply tid
Lotn: sod sulfa 10%+sulfur 5% (45 ml) (alcohol-free)
Rosula Wash wash bid
Clnsr: sod sulfa 10%+sulfur 5% (335 ml)

ORAL ANTIMICROBIALS

➢ ***doxycycline*** **(D)(G)** 40-100 mg bid
Pediatric: <8 years: not recommended; ≥8 years, <100 lb: 2 mg/lb on first day in 2 divided doses, followed by 1 mg/lb/day in 1-2 divided doses; ≥8 years, ≥100 lb: same as adult; *see Appendix CC.19. doxycycline* (Vibramycin Syrup/Suspension) *for dose by weight*
Acticlate *Tab:* 75, 150**mg
Adoxa *Tab:* 50, 75, 100, 150 mg ent-coat
Doryx *Tab:* 50, 75, 100, 150, 200 mg del-rel
Doxteric *Tab:* 50 mg del-rel
Monodox *Cap:* 50, 75, 100 mg
Oracea *Cap:* 40 mg del-rel
Vibramycin *Tab:* 100 mg; *Cap:* 50, 100 mg; *Syr:* 50 mg/5 ml (raspberry-apple) (sulfites); *Oral susp:* 25 mg/5 ml (raspberry)
Vibra-Tab *Tab:* 100 mg film-coat

➢ ***minocycline*** **(D)(G)** 200 mg on first day; then 100 mg q 12 hours x 9 more days
Pediatric: <8 years: not recommended; ≥8 years, <100 lb: 2 mg/lb on first day in 2 divided doses, followed by 1 mg/lb q 12 hours x 9 more days; ≥8 years, ≥100 lb: same as adult
Dynacin *Cap:* 50, 100 mg
Minocin *Cap:* 50, 75, 100 mg; *Oral susp:* 50 mg/5 ml (60 ml) (custard) (sulfites, alcohol 5%)

ACNE VULGARIS

ORAL CONTRACEPTIVES

see Appendix H. Contraceptives
see Appendix H.4. Progesterone-Only Oral Contraceptives ("Mini-Pill")

Comment: In their 2016 published report, researchers concluded different hormonal contraceptives have significantly varied effects on acne. Women (n = 2,147) who were using a hormonal contraceptive at the time of their first consultation for acne comprised the study sample. Participants completed an assessment at baseline to report how the contraceptive affected their acne. Then the researchers used the Kruskal-Wallis test and logistic regression analysis to compare the outcomes by contraceptive type. On average, the vaginal ring and combined oral contraceptives (COCs) improved acne, whereas depot injections, subdermal implants, and hormonal intrauterine devices worsened acne. In the COC categories, ***drospirenone*** was the most helpful in improving acne, followed by ***norgestimate*** and ***desogestrel***, and then ***levonorgestrel*** and ***norethindrone***. Although triphasic progestin dosage had a positive effect on acne, estrogen dosage did not.

TOPICAL ANDROGEN RECEPTOR INHIBITOR

➢ ***clascoterone*** apply a thin layer to affected area twice daily (morning and evening)
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Winlevi *Crm:* 1%
Comment: **Winlevi** is a first-in-class topical androgen receptor inhibitor for the treatment of acne vulgaris. Hypothalmic-pituitary-adrenal (HPA) axis suppression may occur during or after treatment with ***clascoterone***. Attempt to withdraw use if HPA suppression occurs. Pediatric patients may be more susceptible to systemic toxicity. Elevated potassium level has been observed in some subjects during clinical trials. The most common adverse reactions (incidence 7-12%) have been erythema, reddening, pruritis, and scaling/dryness. Additionally, edema, stinging, and burning has occurred in >3% of patients and were reported in a similar percentage of patients treated with vehicle. There are no available data on **Winlevi** cream use in pregnant females to evaluate for an associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. There are no data regarding the presence of ***clascoterone*** or its metabolite in human milk or effects on the breastfed infant.

TOPICAL ANTIMICROBIALS

Comment: All topical antimicrobials should be applied sparingly to clean, dry skin.
➢ ***azelaic acid*** **(B)(G)** apply to affected area bid
Azelex *Crm:* 20% (30, 50 gm)
Finacea *Gel:* 15% (30 gm); *Foam:* 15% (50 gm)
➢ ***benzoyl peroxide*** **(C)(G)**
Comment: ***Benzoyl peroxide*** may discolor clothing and linens.
Benzac-W initially apply to affected area once daily; increase to bid-tid as tolerated
Gel: 2.5, 5, 10% (60 gm)
Benzac-W Wash wash affected area bid
Wash: 5% (4, 8 oz); 10% (8 oz)
Benzagel apply to affected area one or more x/day
Gel: 5, 10% (1.5, 3 oz) (alcohol 14%)
Benzagel Wash wash affected area bid
Gel: 10% (6 oz)

Desquam X5 wash affected area bid
Wash: 5% (5 oz)
Desquam X10 wash affected area bid
Wash: 10% (5 oz)
Triaz apply to affected area daily bid
Lotn: 3, 6, 9% (bottle), 3% (tube); *Pads:* 3, 6, 9% (jar)
ZoDerm apply once or twice daily
Gel: 4.5, 6.5, 8.5% (125 ml); *Crm:* 4.5, 6.5, 8.5% (125 ml); *Clnsr:* 4.5, 6.5, 8.5% (400 ml)

▻ ***clindamycin*** topical **(B)** apply to affected area bid
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Cleocin T *Pad:* 1% (60/pck; alcohol 50%); *Lotn:* 1% (60 ml); *Gel:* 1% (30, 60 gm); *Soln w. applicator:* 1% (30, 60 ml) (alcohol 50%)
Clindagel *Gel:* 1% (42, 77 gm)
Evoclin Foam: 1% (50, 100 gm) (alcohol)

▻ ***clindamycin+benzoyl peroxide*** topical **(C)** apply to affected area once daily
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Acanya (G) apply to affected area once daily-bid
Gel: clin 1.2%+benz 2.5% (50 gm)
BenzaClin (G) apply to affected area bid
Gel: clin 1%+benz 5% (25, 50 gm)
Duac apply daily in the evening
Gel: clin 1%+benz 5% (45 gm)
Onexton Gel (G) apply to affected area once daily
Gel: clin 1.2%+benz 3.75% (50 gm pump) (alcohol-free) (preservative-free)

▻ ***dapsone*** topical **(C)(G)** apply to affected area bid
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Aczone *Gel:* 5, 7.5% (30, 60, 90 gm pump)

▻ ***erythromycin+benzoyl peroxide*** **(C)** initially apply to affected area once daily; increase to bid as tolerated
Benzamycin Topical Gel *Gel:* eryth 3%+benz 5% (46.6 gm/jar)

▻ ***minocycline*** topical foam apply to affected areas once daily; gently rub into the skin
Pediatric: <9 years: not recommended; ≥9 years: same as adult
Amzeeq *Aerosol can:* 4% (30 gm)
Comment: **Amzeeq *(minocycline)*** is a tetracycline-class drug indicated to treat inflammatory lesions of non-nodular moderate-to-severe acne vulgaris in patients >9 years-of-age. The propellant in **Amzeeq** is flammable. Instruct the patient to avoid fire, flame, and smoking during and immediately following application. Use of tetracycline-class of drugs orally during the second and third trimesters of pregnancy, infancy and childhood up to the age of 8 years may cause permanent discoloration of the teeth (yellow-gray-brown) and reversible inhibition of bone growth. If *Clostridioides difficile*-associated diarrhea occurs, discontinue **Amzeeq**. If liver injury is suspected, discontinue **Amzeeq**. Patients who are on anticoagulant therapy may require downward adjustment of their anticoagulant dosage. Avoid co-administration with penicillins. **Amzeeq** may cause fetal harm when when used during pregnancy. Breastfeeding is not recommended while using **Amzeeq**.

▻ ***sodium sulfacetamide*** **(C)(G)** apply tid
Klaron *Lotn:* 10% (2 oz)

ORAL ANTIMICROBIALS

▻ ***doxycycline*** **(D)(G)** 100 mg bid
Pediatric: <8 years: not recommended; ≥8 years, <100 lb: 2 mg/lb on first day in 2 divided doses, followed by 1 mg/lb/day in 1-2 divided doses; ≥8 years, ≥100 lb:

same as adult; *see Appendix CC.19. doxycycline* (Vibramycin Syrup/Suspension) *for dose by weight*

Acticlate *Tab:* 75, 150**mg
Adoxa *Tab:* 50, 75, 100, 150 mg ent-coat
Doryx *Tab:* 50, 75, 100, 150, 200 mg del-rel
Doxteric *Tab:* 50 mg del-rel
Monodox *Cap:* 50, 75, 100 mg
Oracea *Cap:* 40 mg del-rel
Vibramycin *Tab:* 100 mg; *Cap:* 50, 100 mg; *Syr:* 50 mg/5 ml (raspberry-apple) (sulfites); *Oral susp:* 25 mg/5 ml (raspberry)
Vibra-Tab *Tab:* 100 mg film coat

➢ ***erythromycin base*** **(B)(G)** 250 mg qid, 333 mg tid or 500 mg bid x 7-10 days; then taper to lowest effective dose
Pediatric: <45 kg: 30-50 mg in 2-4 divided doses x 7-10 days; ≥45 kg: same as adult

Ery-Tab *Tab:* 250, 333, 500 mg ent-coat
PCE *Tab:* 333, 500 mg

➢ ***erythromycin ethylsuccinate*** **(B)(G)** 400 mg qid x 7-10 days
Pediatric: 30-50 mg/kg/day in 4 divided doses x 7-10 days; may double dose with severe infection; max 100 mg/kg/day; *see Appendix CC.21. erythromycin ethylsuccinate* (E.E.S. Suspension, Ery-Ped Drops/Suspension) *for dose by weight*

EryPed *Oral susp:* 200 mg/5 ml (100, 200 ml) (fruit); 400 mg/5 ml (60, 100, 200 ml) (banana); *Oral drops*: 200, 400 mg/5 ml (50 ml) (fruit); *Chew tab*: 200 mg wafer (fruit)
E.E.S. *Oral susp*: 200, 400 mg/5 ml (100 ml) (fruit)
E.E.S. Granules *Oral susp:* 200 mg/5 ml (100, 200 ml) (cherry)
E.E.S. 400 Tablets *Tab:* 400 mg

➢ ***minocycline*** **(D)(G)** initially 50-200 mg/day in 2 divided doses; reduce dose to once daily after improvement
Pediatric: <8 years: not recommended; ≥8 years: same as adult

Dynacin *Cap:* 50, 100 mg
Minocin *Cap:* 50, 75, 100 mg; *Oral susp:* 50 mg/5 ml (60 ml) (custard) (sulfites, alcohol 5%)
Minolira *Tab:* 105, 135 mg ext-rel
Solodyn *Tab:* 55, 65, 80, 105, 115 mg ext-rel

Comment: Once-daily dosing of **Minolira** or **Solodyn,** extended-release ***minocyclines***, is approved for inflammatory lesions of non-nodular moderate-to-severe acne vulgaris for patients ≥12 years-of-age. The recommended dose of **Solodyn** is 1 mg/kg once daily x 12 weeks.

➢ ***sarecycline*** one tab daily based with or without food; <9 years: not recommended; ≥9 years: *33-54 kg:* 60 mg; *55-84 kg:* 100 mg; *85-136 kg:* 150 mg

Seysara *Tab:* 60, 100, 150 mg

Comment: **Seysara** is a first-in-class, ***tetracycline***-derived, once daily treatment for inflammatory lesions of non-nodular moderate-to-severe acne. Efficacy of **Seysara** beyond 12 weeks and safety beyond 12 months have not been established. **Seysara** has not been evaluated in the treatment of infections. To reduce the development of drug-resistant bacteria as well as to maintain the effectiveness of other antibacterial drugs, **Seysara** should be used only as indicated. If *Clostridioides difficile*-associated diarrhea (antibiotic-associated colitis) occurs, discontinue **Seysara**. Central nervous system side effects, including light-headedness, dizziness, or vertigo, have been reported with ***tetracycline*** use. Patients who experience these symptoms should be cautioned about driving vehicles or using hazardous machinery. These symptoms may disappear during therapy and may disappear when the drug is discontinued. **Seysara** may cause intracranial hypertension;

discontinue **Seysara** if symptoms occur. Photosensitivity can occur with **Seysara**; minimize or avoid exposure to natural or artificial sunlight.
tetracycline is contraindicated <8 years-of-age, in pregnancy, and lactation (discolors developing tooth enamel). A side effect may be photo-sensitivity (photophobia). Avoid co-administration with retinoids and penicillin. Decrease anticoagulant dosage as appropriate. Monitor for toxicities of drugs that may require dosage reduction (e.g., P-glycoprotein substrates) and monitor for toxicities. Do not take with antacids, calcium supplements, iron preparations, milk or other dairy, or within two hours of taking another drug.

➢ ***tetracycline* (D)(G)** initially 1 gm/day in 2-4 divided doses; after improvement, 125-500 mg daily
Pediatric: <8 years: not recommended; ≥8 years, <100 lb: 25-50 mg/kg/day in 2-4 divided doses; ≥8 years, ≥100 lb: same as adult; *see* Appendix CC.31. *tetracycline* (Sumycin Suspension) *for dose by weight*
Achromycin V *Cap:* 250, 500 mg
Sumycin *Tab:* 250, 500 mg; *Cap:* 250, 500 mg; *Oral susp:* 125 mg/5 ml (100, 200 ml) (fruit) (sulfites)

TOPICAL RETINOIDS

Comment: Wash affected area with a soap-free cleanser; pat dry and wait 20 to 30 minutes; then apply sparingly to affected area; use only once daily in the evening. Avoid applying to eyes, ears, nostrils, and mouth.

➢ ***adapalene* (C)** apply once daily at HS
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Differin *Crm:* 0.1% (45 gm); *Gel:* 0.1, 0.3% (45 gm) (alcohol-free); *Pad:* 0.1% (30/pck) (alcohol 30%); *Lotn:* 0.1% (2, 4 oz)

➢ ***tazarotene* (X)(G)** apply to affected area once daily at HS
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Arazlo *Tube:* **0.045% (45 gm)**
Commment: **Arazlo *(tazarotene)*** is a lotion formulation of retinoid ***tazarotene*** approved for the topical treatment of acne vulgaris in patients ≥9 years-of-age.
Avage Cream *Crm:* 0.1% (30 gm)
Tazorac Cream *Crm:* 0.05, 0.1% (15, 30, 60 gm)
Tazorac Gel *Gel:* 0.05, 0.1% (30, 100 gm)

➢ ***tretinoin* (C)(G)** apply sparingly to affected area once or twice daily
Comment: Dryness, pain, erythema, irritation, and exfoliation may occur during treatment. Avoid paranasal creases and mucous membranes. Minimize exposure to sunlight and sunlamps. Use sunscreen and protective clothing when sun exposure cannot be avoided. Use with caution if allergic to fish due to potential for allergenicity to fish protein.
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Altreno *Lotn:* 0.05% (45 gm tube)
Comment: **Altreno** is indicated for children >9 years-of-age. Apply a thin film to affected area bid.
Atralin Gel *Gel:* 0.05% (45 gm)
Avita *Crm:* 0.025% (20, 45 gm); *Gel:* 0.025% (20, 45 gm)
Retin-A Cream *Crm:* 0.025, 0.05, 0.1% (20, 45 gm)
Retin-A Gel *Gel:* 0.01, 0.025% (15, 45 gm) (alcohol 90%)
Retin-A Liquid *Soln:* 0.05% (alcohol 55%)
Retin-A Micro Gel *Gel:* 0.04, 0.08, 0.1% (20, 45 gm)
Tretin-X Cream *Crm:* 0.075% (35 gm) (parabens-free, alcohol-free, propylene glycol-free)

➢ ***trifarotene 0.005% cream*** apply a thin layer to the affected areas of the face chest, shoulders, and/or back once daily, in the evening, to clean and dry skin; avoid

contact with the eyes, lips, paranasal creases, and mucous membranes
Pediatric: <9 years: not recommended; ≥9 years: same as adult
Aklief *Pump:* 30, 45, 70 gm

TOPICAL RETINOID+ANTIMICROBIAL COMBINATIONS

Comment: Wash affected area with a soap-free cleanser; pat dry and wait 20-30 minutes; then apply sparingly to affected area; use only once daily in the evening. Avoid eyes, ears, nostrils, and mouth.

➢ ***adapalene+benzoyl peroxide*** **(C)(G)** apply a thin film once daily
Pediatric: <18 years: not recommended
Epiduo Gel *Gel:* adap 0.1%+benz 2.5% (45 gm)
Epiduo Forte Gel *Pump gel:* adap 0.3%+benz 2.5% (15, 30, 45, 60 gm)

➢ ***tretinoin+clindamycin*** **(C)(G)** apply a thin film once daily
Pediatric: <18 years: not recommended
Ziana *Gel: tret* 0.025%+*clin* 1.2% (30, 60 gm)

ORAL RETINOID

Comment: Oral retinoids are indicated only for severe recalcitrant nodular acne unresponsive to conventional therapy including systemic antibiotics.

➢ ***isotretinoin*** **(X)** initially 0.5-1 mg/kg/day in 2 divided doses; maintenance 0.5-2 mg/kg/day in 2 divided doses x 4-5 months; repeat only if necessary 2 months following cessation of first treatment course
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Accutane *Cap:* 10, 20, 40 mg (parabens)
Amnesteem *Cap:* 10, 20, 40 mg (soy)
Comment: ***Isotretinoin*** is highly teratogenic and, therefore, female patients should be counseled prior to initiation of treatment as follows: Two negative pregnancy tests are required prior to initiation of treatment and monthly thereafter. Not for use in females who are or who may become pregnant or who are breastfeeding. Two effective methods of contraception should be used for 1 month prior to, during, and continuing for 1 month following completion of treatment. Low-dose *progestin* (mini-pill) may be an *inadequate* form of contraception. No refills; a new prescription is required every 30 days and prescriptions must be filled within 7 days. Serum lipids should be monitored until response is established (usually initially and again after 4 weeks). Bone growth, serum glucose, ESR, RBCs, WBCs, and liver enzymes should be monitored. Blood should not be donated during, or for 1 month after, completion of treatment. Avoid the sun and artificial UV light. ***isotretinoin*** should be discontinued if any of the following occurs: visual disturbances, tinnitus, hearing impairment, rectal bleeding, pancreatitis, hepatitis, significant decrease in CBC, hyperlipidemia (particularly hypertriglyceridemia).

ACROMEGALY

GROWTH HORMONE RECEPTOR ANTAGONIST

➢ ***pegvisomant*** **(B)** *Loading dose:* 40 mg SC; *Maintenance:* 10 mg SC daily; titrate by 5 mg (increments or decrements, based on IGF-1 levels) every 4 to 6 weeks; max 30 mg/day
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Somavert *Inj:* 10, 15, 20 mg
Comment: Prior to initiation of ***pegvisomant***, patients should have baseline fasting serum glucose, $HgbA1_c$, serum K^+ and Mg^{++}, liver function tests (LFTs), EKG, and gall bladder ultrasound.

CYCLOHEXAPEPTIDE SOMATOSTATIN

➢ ***pasireotide*** **(C)** administer SC in the thigh or abdomen; initial dose is 0.6 mg or 0.9 mg bid; titrate dose based on response and tolerability; for patients with moderate hepatic impairment *(Child-Pugh Class B),* the recommended initial dosage is 0.3 mg twice daily and max dose 0.6 mg twice daily; avoid use in patients with severe hepatic impairment *(Child-Pugh Class C)*
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Signifor LAR *Amp:* 0.3, 0.6, 0.9 mg/ml, single-dose, long-act rel (LAR) susp for inj

SOMATOSTATIN ANALOG

➢ ***octreotide acetate***
Comment: ***octreotide acetate*** is indicated for reduction of growth hormone (GH) and insulin-like growth factor 1 (IGF-1) (somatomedin C) in adult patients with acromegaly who have had inadequate response to or cannot be treated with surgical resection, pituitary irradiation, and bromocriptine mesylate at maximally tolerated doses. Monitor patients treated with ***octreotide acetate*** for cholelithiasis. Glucose monitoring is recommended and antidiabetic treatment may need adjustment. Hypothyroidism may occur; monitor thyroid levels periodically. Bradycardia, arrhythmia, or conduction abnormalities may occur; use with caution in at-risk patients. Common adverse side effects may include diarrhea, cholelithiasis, abdominal pain, flatulence. Advise pre-menopausal females of the potential for an unintended pregnancy.

PARENTERAL FORMS

➢ ***octreotide acetate***
Bynfezia Pen initiate at 50 mcg SC 3 x/day; typical dose is 100 mcg SC 3 x/day
Prefilled Pen: 2.5 mg/ml (2500 mcg/ml) 2.8 ml, single-patient-use
Sandostatin initiate at 50 mcg SC 3 x/ day; IGF-I (somatomedin C) levels every 2 weeks can be used to guide titration; goal is to achieve growth hormone levels <5 ng/mL or IGF-I (somatomedin C) levels <1.9 unit/mL (males) and <2.2 unit/mL (females); most common effective dose is 100 mcg SC 3 x/day; some patients require up to 500 mcg SC 3 x/day for maximum effectiveness; >300 mcg/day seldom results in additional biochemical benefit; if dose increase fails to provide additional benefit, the dose should be reduced; IGF-I (somatomedin C) or growth hormone levels should be re-evaluated at 6-month intervals
Vial: 200, 1000 mcg/5 ml, multidose; *Amp:* 50, 100, 500 mcg/ml
Comment: **Sandostatin** should be withdrawn yearly for approximately 4 weeks from patients who have received irradiation to assess disease activity. If growth hormone or IGF-I (somatomedin C) levels increase and signs and symptoms recur, **Sandostatin** therapy may be resumed.
Sandostatin LAR Depot after administering **Sandostatin** 50 mcg SC 3 x/day for 2 weeks, initiate Sandostatin LAR Depot suspension 20 mg IM intragluteally every 4 weeks for 3 months
Vial: 10, 20, 30 mg/6 ml, single-use
Comment: **Sandostatin LAR Depot** is indicated for treatment in patients with acromegaly who have first responded to **Sandostatin** with achievement of growth hormone levels <5 ng/mL or IGF-I (somatomedin C) levels <1.9 unit/mL (males) and <2.2 unit/mL (females).

ORAL FORM

➢ **Mycapssa** initiate at 40 mg daily, as 20 mg twice daily; titrate in increments of 20 mg; max 80 mg/day; monitor insulin-like growth factor 1 (IGF-1) levels and patient's signs and symptoms every two weeks during the dose titration or as indicated once the maintenance dose is achieved, monitor IGF-1 levels and

patient's signs and symptoms monthly or as indicated; *ESRD:* initiate at 20 mg once daily; titrate and adjust maintenance dose based on IGF-1 levels, signs and symptoms, and tolerability (take with a glass of water on an empty stomach, at least 1 hour before a meal or at least 2 hours after a meal

Cap: 20 mg del-rel

Comment: **Mycapssa** is an oral form of ***octreotide*** indicated for long-term maintenance treatment of patients with acromegaly who have responded to and tolerated treatment with parental ***octreotide*** or ***lanreotide***. Most common adverse reactions (incidence >10%) are nausea, diarrhea, headache, arthralgia, asthenia, hyperhidrosis, peripheral swelling, blood glucose increased, vomiting, abdominal discomfort, dyspepsia, sinusitis, and osteoarthritis. Concomitant use of **Mycapssa** with other drugs mainly metabolized by CYP3A4 that have a narrow therapeutic index (e.g., ***quinidine***) should be used with caution.

ACTINIC KERATOSIS (AK)

➢ ***aminolevulinic acid 10%*** clean and prepare all lesions prior to applying gel 1 mm thick and include 5 mm of the surrounding skin; max application area 20 cm^2 and max 2 gm per treatment; apply an occlusive dressing x 3 hours; photodynamic therapy involves preparation of lesions, application of the **Ameluz**, occlusion, and illumination with BF-RhodoLED only by a qualified healthcare provider; remove remaining gel at the end of the treatment; may re-treat in 3 months after the initial treatment; BF-RhodoLED user manual for detailed lamp safety and operating instructions.

Pediatric: <18 years: not recommended; ≥18 years: same as adult

Ameluz *Gel:* 10% (2 gm tube) 100 mg/gm of ***aminolevulinic acid hcl*** (equivalent to 78 mg/gm ***aminolevulinic acid***) (xanthan gum, soybean phosphatidylcholine, polysorbate 80, medium-chain triglycerides, dibasic sodium phosphate, monobasic sodium phosphate, propylene glycol, sodium benzoate, isopropal alcohol)

Comment: **Ameluz** (***aminolevulinic acid***) 10% gel, a porphyrin precursor, in combination with photodynamic therapy using BF-RhodoLED lamp, is indicated for the lesion-directed and field-directed treatment of actinic keratoses of mild-to-moderate severity on the face and scalp. The most common adverse reactions (incidence ≥10%) have been application site erythema, pain/burning, irritation, edema, pruritus, exfoliation, scab formation, induration, and vesicles. Concomitant use of other photosensitizing agents may increase the risk of phototoxic reaction to photodynamic therapy (e.g., St. John's wort, ***griseofulvin***, thiazide diuretics, sulfonylureas, phenothiazines, sulfonamides, quinolones, and tetracyclines). Patient and healthcare provider must wear protective eyewear before and during operation of the BF-RhodoLED lamp. Treated lesions should be protected from sunlight exposure for 48 hours posttreatment. Special care should be taken to avoid bleeding during lesion preparation in patients with inherited or acquired a coagulation disorder. Avoid direct contact of **Ameluz** with the eyes and mucous membranes. There are no human or animal reproductive studies of **Ameluz** use in pregnancy to inform a drug-associated risk. Systemic absorption of ***aminolevulinic acid*** is negligible. No data are available regarding the presence of ***aminolevulinic acid*** in human milk or effects on the breastfed infant; however, breastfeeding is not expected to result in infant exposure to the drug due to negligible systemic absorption.

➢ ***diclofenac sodium 3%*** **(C; D ≥30 wks)(G)** apply to lesions bid x 60-90 days

Pediatric: <12 years: not established; ≥12 years: same as adult

Solaraze Gel *Gel:* 3% (50 gm) (benzyl alcohol)

Comment: ***Diclofenac*** is contraindicated with ***aspirin*** allergy. As with other NSAIDs, **Solaraze Gel** should be avoided in late pregnancy (≥30 weeks) because it may cause premature closure of the ductus arteriosus.

Voltaren Gel apply qid; avoid non-intact skin

Gel: 1% (100 gm)

➢ ***fluorouracil* (X)(G)** apply to lesion(s) daily-bid until erosion occurs, usually 2-4 weeks

Pediatric: <12 years: not recommended; ≥12 years: same as adult

Carac *Crm:* 0.5% (30 gm)

Efudex (G) *Crm:* 5% (25 gm); *Soln:* 2, 5% (10 ml w. dropper)

Fluoroplex *Crm:* 1% (30 gm); *Soln:* 1% (30 ml w. dropper)

➢ ***imiquimod* (B)(G)**

Pediatric: <18 years: not recommended; ≥18 years: same as adult

Aldara (G) rub into lesions before bedtime and remove with soap and water 8 hours later; treat 2 times per week; max 16 weeks

Crm: 5% (single-use pkts/carton)

Zyclara rub into lesions before bedtime and remove with soap and water 8 hours later; treat for 2-week cycles separated by a 2-week no-treatment cycle; max 2 packs per application; max one treatment course per area

Crm: 3.75% (single-use pkts; 28/carton) (parabens)

➢ ***ingenol mebutate* (C)** limit application to one contiguous skin area of about 25 cm^2 using one unit dose tube; allow treated area to dry for 15 minutes; wash hands immediately after application; may remove with soapy water after 6 hours; *Face and Scalp*: apply 0.015% gel to lesions daily x 3 days; *Trunk and Extremities*: apply 0.05% gel to lesions daily x 2 days

Pediatric: <18 years: not recommended; ≥18 years: same as adult

Picato *Gel:* 0.015% (3 single-use tubes), 0.05% (2 single-use tubes)

Src KINASE AND TUBULIN POLYMERIZATION INHIBITOR

➢ ***tirbanibulin*** apply to the treatment field on the face or scalp once daily for 5 consecutive days using 1 single-dose packet per application

Pediatric: <18 years: not established; ≥18 years: same as adult

Klisyri Oint: 1%, single-dose pkts (25 mg/pkt)

Comment: **Klisyri *(tirbanibulin)*** is a first-in-class dual Src Kinase and tubulin polymerization inhibitor for the topical treatment of actinic keratosis on the face or scalp. The most common adverse reactions (incidence ≥2%) have been local skin reactions, application site pruritus, and application site pain.

ADRENOCORTICAL INSUFFICIENCY

CORTICOSTEROID

➢ ***hydrocortisone granules*** individualize the dose, using the lowest possible dosage; *Recommended Starting Replacement Dose:* 8 to 10 mg/m^2 daily (higher doses may be needed based on patient's age and symptoms of the disease; lower starting doses may be sufficient in patients with residual but decreased endogenous cortisol production; round the dose to the nearest 0.5 mg or 1 mg. More than one capsule may be needed to supply the required dose; divide the total daily dose into 3 doses and administer 3 times daily; older patients may have their daily dose divided by 2 and administered twice daily; do not swallow the capsule; do not chew or crush the granules; see the mfr pkg insert for full prescribing information and for detailed administration instructions.

Alkindi Sprinkle *Cap:* 0.5 mg, 1 mg, 2 mg, 5 mg oral granules

Comment: **Alkindi Sprinkle** is indicated as replacement therapy in pediatric patients with adrenocortical insufficiency. Use the minimum dosage to achieve desired clinical response. Common adverse reactions

for corticosteroids include fluid retention, alteration in glucose tolerance, elevation in blood pressure, behavioral and mood changes, increased appetite, and weight gain. Corticosteroids decrease bone formation and increase bone resorption, which may lead to inhibition of bone growth and development of osteoporosis. Use may be associated with severe psychiatric adverse reactions, such as euphoria, mania, psychosis with hallucinations, and delirium or depression. Symptoms typically emerge within a few days or weeks of starting the treatment. Most reactions resolve after either dose reduction or withdrawal. Cataracts, glaucoma, and central serous chorioretinopathy have been reported with prolonged use of high doses. Monitor patients for blurred vision or other visual disturbances. Prolonged use with supraphysiologic doses may cause Cushing's syndrome. Monitor patients for signs and symptoms of Cushing's syndrome every 6 months, pediatric patients under one year of age may require more frequent monitoring. Long-term use in excessive doses may cause growth retardation; monitor the patient's growth. Excessive doses may increase the risks of new infections or exacerbation of latent infections with any pathogen, including viral, bacterial, fungal, protozoan, or helminthic infections. Monitor patients for signs and symptoms of infections. Treat all infections seriously and initiate stress dosing of corticosteroids early. Undertreatment or sudden discontinuation of therapy may lead to adrenocortical insufficiency, adrenal crisis, and death. Increase the dose during periods of stress. Switch patients who are vomiting, severely ill, or unable to take oral medications to parenteral corticosteroid formulations.

ALCOHOL DEPENDENCE, DETOXIFICATION/ALCOHOL WITHDRAWAL SYNDROME

ALCOHOL WITHDRAWAL SYNDROME

Comment: Total length of time of a given detoxification regimen and/or length of time of treatment at any dose reduction level may be extended based on patient-specific factors, including potential or actual seizure, hallucinosis, and increased sympathetic nervous system activity (severe anxiety, unwanted elevation in vital signs). If any of these symptoms are anticipated or occur, revert to an earlier step in the dosing regimen to stabilize the patient, extend the detoxification timeline, and consider appropriate adjunctive drug treatments (e.g., anticonvulsants, antipsychotic agents, antihypertensive agents, sedative hypnotics agents).

➢ ***clorazepate*** **(D)(IV)(G)** in the following dosage schedule: *Day 1:* 30 mg initially, followed by 30-60 mg in divided doses; *Day 2:* 45-90 mg in divided doses; *Day 3:* 22.5-45 mg in divided doses; *Day 4:* 15-30 mg in divided doses; Thereafter, gradually reduce the daily dose to 7.5-15 mg; then discontinue when patient's condition is stable; max dose 90 mg/day

Pediatric: <18 years: not recommended; ≥18 years: same as adult

Tranxene *Tab:* 3.75, 7.5, 15 mg

Tranxene T-Tab *Tab:* 3.75*, 7.5*, 15*mg

➢ ***chlordiazepoxide*** **(D)(IV)(G)**

Pediatric: <18 years: not recommended; ≥18 years: same as adult

Librium 50-100 mg q 6 hours x 24-72 hours; then q 8 hours x 24-72 hours; then q 12 hours x 24-72 hours; then daily x 24-72 hours

Cap: 5, 10, 25 mg

Librium Injectable 50-100 mg IM or IV; then 25-50 mg IM tid-qid prn; max 300 mg/day

Inj: 100 mg

➢ ***diazepam*** **(D)(IV)(G)** 2-10 mg q 6 hours x 24-72 hours; then q 8 hours x 24-72 hours; then q 12 hours x 24-72 hours; then daily x 24-72 hours

Pediatric: <18 years: not recommended; ≥18 years: same as adult

Diastat *Rectal gel delivery system:* 2.5 mg
Diastat Acu Dial *Rectal gel delivery system:* 10, 20 mg
Valium *Tab:* 2*, 5*, 10*mg
Valium Injectable *Vial:* 5 mg/ml (10 ml); *Amp:* 5 mg/ml (2 ml); *Prefilled syringe:* 5 mg/ml (5 ml)
Valium Intensol Oral Solution *Conc oral soln:* 5 mg/ml (30 ml w. dropper) (alcohol 19%)
Valium Oral Solution *Oral soln:* 5 mg/5 ml (500 ml) (wintergreen-spice)

▶ ***oxazepam*** **(C)** 10-15 mg tid-qid x 24-72 hours; decrease dose and/or frequency every 24-72 hours; total length of therapy 5-14 days; max 120 mg/day
Pediatric: <18 years: not recommended; ≥18 years: same as adult
Cap: 10, 15, 30 mg

ABSTINENCE THERAPY

GABA Taurine Analog

▶ ***acamprosate*** **(C)(G)** 666 mg tid; begin therapy during abstinence; continue during relapse; *CrCl 30-50-mL/min*: max 333 mg tid; *CrCl <30 mL/min*: contraindicated
Pediatric: <18 years: not recommended; ≥18 years: same as adult
Campral *Tab:* 333 mg ext-rel
Comment: **Campral** does not eliminate or diminish alcohol withdrawal symptoms.

AVERSION THERAPY

▶ ***disulfiram*** **(X)(G)**
Pediatric: <18 years: not recommended; ≥18 years: same as adult
Antabuse 500 mg once daily x 1-2 weeks; then 250 mg once daily
Tab: 250, 500 mg; *Chew tab:* 200, 500 mg
Comment: ***Disulfiram*** use requires informed consent. Contraindications: severe cardiac disease, psychosis, concomitant use of ***isoniazid***, ***phenytoin***, ***paraldehyde***, and topical and systemic alcohol-containing products. Approximately 20% remains in the system for 1 week after discontinuation.

ALLERGIC REACTION: GENERAL

Oral Second Generation Antihistamines *see* Appendix AA. Drugs for the Management of Allergy, Cough, and Cold Symptoms online at https://connect.springerpub.com/content/reference-book/978-0-8261-7935-7/back-matter/part02/back-matter/bmatter27
Topical Corticosteroids *see* Appendix K. Topical Corticosteroids by Potency
Parenteral Corticosteroids *see* Appendix M. Parenteral Corticosteroids
Oral Corticosteroids *see* Appendix L. Oral Corticosteroids

FIRST GENERATION PARENTERAL ANTIHISTAMINE

▶ ***diphenhydramine*** **(C)(G)** 25-50 mg IM immediately; then q 6 hours prn
Pediatric: <12 years: *See mfr pkg insert:* 1.25 mg/kg up to 25 mg IM x 1 dose; then every 6 hours prn
Benadryl Injectable *Vial:* 50 mg/ml (1 ml single-use); 50 mg/ml (10 ml multi-dose); *Amp:* 10 mg/ml (1 ml); *Prefilled syringe:* 50 mg/ml (1 ml)

FIRST GENERATION ORAL ANTIHISTAMINES

▶ ***diphenhydramine*** **(B)(G)** 25-50 mg q 6-8 hours; max 100 mg/day
Pediatric: <2 years: not recommended; 2-6 years: 6.25 mg q 4-6 hours; max 37.5 mg/day; >6-12 years: 12.5-25 mg q 4-6 hours; max 150 mg/day; >12 years: same as adult

Benadryl (OTC) *Chew tab:* 12.5 mg (grape) (phenylalanine); *Liq:* 12.5 mg/5 ml (4, 8 oz); *Cap:* 25 mg; *Tab:* 25 mg; *Dye-free soft gel:* 25 mg; *Dye-free liq:* 12.5 mg/5 ml (4, 8 oz)

➢ ***hydroxyzine*** **(C)(G)** 50-100 mg qid; max 600 mg/day
Pediatric: <6 years: 50 mg/day divided qid; ≥6 years: 50-100 mg/day divided qid
Atarax *Tab:* 10, 25, 50, 100 mg; *Syr:* 10 mg/5 ml (alcohol 0.5%)
Vistaril *Cap:* 25, 50, 100 mg; *Oral susp:* 25 mg/5 ml (4 oz) (lemon)

ALLERGIES: MULTI-FOOD

Comment: Eight food-types cause about 90% of food allergy reactions—***Milk*** (mostly in children), ***Eggs, Peanuts, Tree nuts***, (e.g., walnuts, almonds, pine nuts, brazil nuts, and pecans), ***Soy, Wheat*** (and other grains with gluten, including barley, rye, and oats), ***Fish*** (mostly in adults), ***Shellfish*** (mostly in adults). Combining ***omalizumab*** with oral immunotherapy (OIT) significantly improves the effectiveness of OIT in children with multiple food allergies, according to the results of a recent study. Researchers conducted a blinded, phase 2 clinical trial including children aged 4 to 15 years who had multi-food allergies validated by double-blind, placebo-controlled food challenges. Participants were randomly assigned (3:1) to either receive ***omalizumab*** with multi-food oral immunotherapy or placebo. ***omalizumab*** and placebo were administered for 16 weeks, with oral immunotherapy beginning at 8 weeks. Overall, at week 36, a significantly greater proportion of the ***omalizumab***-treated participants passed double-blind, placebo-controlled food challenges, compared with placebo (83% vs 33%). No serious or severe adverse events were reported. In multi-food allergic patients, ***omalizumab*** improves the efficacy of multi-food oral immunotherapy and enables safe and rapid desensitization.

IGE BLOCKER (IGG1K MONOCLONAL ANTIBODY)

➢ ***omalizumab*** **(B)** 150-375 mg SC every 2-4 weeks based on body weight and pre-treatment serum total IgE level; max 150 mg/injection site; approved for patient self-administration after education by a qualified healthcare provider
Pediatric: <12 years: not recommended; 30-90 kg + IgE >30-100 IU/ml 150 mg q 4 weeks; 90-150 kg + IgE >30-100 IU/ml or 30-90 kg + IgE >100-200 IU/ml or 30-60 kg + IgE >200-300 IU/ml 300 mg q 4 hours; >90-150 kg + IgE >100-200 IU/ml or >60-90 kg + IgE >200-300 IU/ml or 30-70 kg + IgE >300-400 IU/ml 225 mg q 2 weeks; >90-150 kg + IgE >200-300 IU/ml or >70-90 kg + IgE >300-400 IU/ml or 30-70 kg + IgE >400-500 IU/ml or 30-60 kg + IgE >500-600 IU/ml or 30-60 kg + IgE >600-700 IU/ml 375 mg q 2 weeks; ≥12 years: same as adult
Xolair *Vial:* 150 mg, single-dose, pwdr for SC injection after reconstitution
Prefilled syringe: 75 mg/0.5 ml, 150 mg/1 ml single-dose (preservative-free)

ALPHA-1 ANTITRYPSIN (AAT) DEFICIENCY

Comment: Alpha-1 antitrypsin (AAT, a major circulating serine protease inhibitor) deficiency is a common genetic (autosomal co-dominant) condition characterized by low serum levels of AAT. Absence of deficiency of AAT accelerates lung tissue degradation and increases the risk for development of COPD and early onset emphysema, particularly in smokers. Extrapulmonary complications of ATT deficiency include liver disease (onset as early as childhood), granulomatosis with polyangitis (GPA, previously known as Wegener's granulomatosis), vasculitis, and necrotizing panniculitis. Management of symptomatic AAT and exacerbations includes bronchodilators (LABA/LAMA) and inhaled corticosteroids in line with the management of COPD symptoms and exacerbations (Global Initiative for Chronic Obstructive Lung Diaease [GOLD]). Management of ATT includes smoking cessation; avoidance of environmental pollutants; immunizations against

influenza, pneumonia, and hepatitis; antibiotic therapy as needed (with ***amoxicillin*** or a macrolide); and management in a critical care setting for acute respiratory distress/failure. Pharmacologic management of AAT deficiency may also include AAT infusion therapy (with alpha-1 proteinase inhibitor, the only treatment to slow disease progression). *Brand names:* **Aralasp, Glassia, Prolastin, Prolastin-C, Zemaira.**

➢ ***alpha-1 proteinase inhibitor (human)*** **(C)**(G) recommended dosage of **Aralast** is 60 mg/kg administered once weekly via IV infusion, by a qualified healthcare provider, at a rate not to exceed 0.08 ml/kg; if any adverse event occurs, the rate should be reduced or the infusion interrupted until the symptoms subside; the infusion may then be resumed at a rate tolerated; refer to mfr pkg insert for detailed preparation directions and administration protocol.
Pediatric: safety and effectiveness in pediatric patients have not been established.
Aralast *Vial:* 25 ml/0.5 gm, 50 ml/1 gm (1 single-use vial of product + 1 single-use vial of diluent + **1** double-ended transfer needle and 1-20 micron filter; sterile, stable, lyophilized preparation of preservative-free purified human alpha1-proteinase inhibitor (a1-PI), also known as alpha1-antitrypsin, for reconstitution with diluent provided; do not administer or mix with other agents or diluting solutions; when reconstituted, concentration of a1-PI is not less than 16 mg/ml and the specific activity is not less than 0.55 mg active a1-PI/mg total protein; refrigerate; do not freeze; administer within 3 hours after the reconstituted product is warmed to room temperature; discard partially used vials.
Comment: Alpha 1-Proteinase Inhibitor (Human), **Aralast**, is indicated for chronic augmentation therapy in patients having congenital deficiency of a1-PI with clinically evident emphysema. Clinical and biochemical studies have demonstrated that with such therapy, **Aralast** is effective in maintaining target serum a1-PI trough levels and increasing a1-PI levels in epithelial lining fluid (ELF). Clinical data demonstrating the long-term effects of chronic augmentation or replacement therapy of individuals with **Aralast** are not available. **Aralast** is not indicated as therapy for lung disease patients in whom congenital a1-PI deficiency has not been established. **Aralast** is contraindicated in individuals with selective IgA deficiencies (IgA level <15 mg/dl) who have known antibody against IgA, since they may experience a severe reactions, including anaphylaxis, to IgA which may be present. **Aralast** is prepared from large pools of human plasma by using the Cohn-Oncley cold alcohol fractionation process, followed by purification steps including polyethylene glycol and zinc chloride precipitations and ion exchange chromatography. To reduce the risk of viral transmission, the manufacturing process includes treatment with a solvent detergent (SD) mixture (tri-n-butyl phosphate and polysorbate 80) to inactivate enveloped viral agents, such as HIV and Hepatitis B and C. In addition, a nano-filtration step is incorporated prior to final sterile filtration to reduce the risk of transmission of non-enveloped viral agents. It is not known whether **Aralast** can cause fetal harm when administered to pregnant females or can affect reproductive capacity. It is not known whether alpha1-proteinase inhibitor is excreted in human milk.

ALZHEIMER'S DISEASE

NUTRITIONAL SUPPLEMENT

➢ ***l-methylfolate calcium (as metafolin)+methylcobalamin+n-acetyl cysteine*** take 1 cap once daily
Cerefolin *Cap:* metafo 5.6 mg+methyl 2 mg+n-ace cys 600 mg (gluten-free, yeast-free, lactose-free)

Comment: **Cerefolin** is indicated in the dietary management of patients treated for early memory loss, with emphasis on those at risk for neurovascular oxidative stress, hyperhomocysteinemia, mild- to- moderate cognitive impairment with or without vitamin B12 deficiency, vascular dementia, or Alzheimer's disease.

REVERSIBLE ANTICHOLINESTERASE INHIBITORS (RAIs)

Comment: The RAI drugs do not halt disease progression. They are indicated for early-stage disease; not effective for severe dementia. If treatment is stopped for more than several days, re-titrate from lowest dose. Side effects include nausea, anorexia, dyspepsia, diarrhea, headache, and dizziness. Side effects tend to resolve with continued treatment. Peak cognitive improvements are seen 12 weeks into therapy (increased spontaneity, reduced apathy, lessened confusion, and improved attention, conversational language, and performance of daily routines).

➢ ***donepezil*** **(C)(G)** initially 5 mg q HS, increase to 10 mg after 4-6 weeks as needed; max 23 mg/day

Aricept *Tab:* 5, 10, 23 mg

Aricept ODT *ODT tab:* 5, 10 mg orally-disint

➢ ***galantamine*** **(B)** initially 4 mg bid x at least 4 weeks; usual maintenance 8 mg bid; max 16 mg bid

Razadyne *Tab:* 4, 8, 12 mg

Razadyne ER *Tab:* 8, 16, 24 mg ext-rel

Razadyne Oral Solution *Oral soln:* 4 mg/ml (100 ml w. calib pipette)

➢ ***rivastigmine*** **(B)(G)**

Exelon initially 1.5 mg bid, increase every 2 weeks as needed; max 12 mg/day; take with food

Cap: 1.5, 3, 4.5, 6 mg

Excelon Oral Solution initially 1.5 mg bid; may increase by 1.5 mg bid at intervals of at least 2 weeks; usual range 6-12 mg/day; max 12 mg/day; if stopped, restart at lowest dose and re-titrate; may take directly from syringe or mix with water, fruit juice, or cola

Oral soln: 2 mg/ml (120 ml w. dose syringe)

Excelon Patch initially apply 4.6 mg/24 hr patch; if tolerated, may increase to 9.5 mg/24 hr patch after 4 weeks; max 13.3 mg/24 hr; change patch daily; apply to clean, dry, hairless, intact skin; rotate application site; allow 14 days before applying new patch to same site

Patch: 4.6, 9.5, 13.3 mg/24 hr trans-sys (30/carton)

➢ ***tacrine*** **(C)** initially 10 mg qid, increase 40 mg/day q 4 weeks as needed; max 160 mg/day

Cognex *Cap:* 10, 20, 30, 40 mg

Comment: Transaminase levels should be checked every 3 months while taking Cognex.

N-METHYL-D-ASPARTATE (NMDA) RECEPTOR ANTAGONIST

➢ ***memantine*** **(B)(G)**

Namenda initially 5 mg once daily; titrate weekly in 5 mg/day increments; *Week 2*: 5 mg bid; *Week 3*: 5 mg AM and 10 mg PM; *Week 4*: 10 mg bid; *CrCl 5-29 mL/min:* max 5 mg bid

Tab: 5, 10 mg

Namenda Oral Solution initially 5 mg once daily; titrate weekly in 5 mg increments administered bid

Oral soln: 2 mg/ml (360 ml) (peppermint) (sugar-free, alcohol-free)

Namenda Titration Pak

Cap: 7 x 7 mg, 7 x 14 mg, 7 x 21 mg, 7 x 28 mg/pck

Namenda XR initially 7 mg once daily; titrate in 7 mg increments weekly; max 28 mg once daily; do not divide doses
Cap: 7, 14, 21, 28 mg ext-rel

Comment: ***Memantine*** does not halt disease progression. It is indicated for moderate-to-severe dementia.

N-METHYL-D-ASPARTATE (NMDA) RECEPTOR ANTAGONIST+ ACETYLCHOLIN-ESTERASE INHIBITOR COMBINATION

▶ ***memantine+donepezil*** **(C)(G)** initiate one 28/10 dose daily in the evening after stabilized on ***memantine*** and ***donepezil*** separately; start the day after the last dose of ***memantine*** and ***donepezil*** taken separately; swallow whole or open cap and sprinkle on applesauce; *CrCl 5-29 ml/min:* take one 14/10 dose once daily in the evening

Namzaric
Cap: **Namzaric 7/10** mem 7 mg+done 10 mg
Namzaric 14/10 mem 14 mg+done 10 mg
Namzaric 21/10 mem 21 mg+done 10 mg
Namzaric 28/10 mem 28 mg+done 10 mg

ERGOT ALKALOID (DOPAMINE AGONIST)

▶ ***ergoloid mesylate*** **(C)** 1 mg tid
Hydergine *Tab:* 1 mg
Hydergine LC *Cap:* 1 mg
Hydergine Liquid *Liq:* 1 mg/ml (100 ml w. calib dropper) (alcohol 28.5%)

AMEBIASIS

AMEBIASIS (INTESTINAL)

▶ ***diiodohydroxyquin (iodoquinol)*** **(C)(G)** 650 mg tid pc x 20 days
Pediatric: <6 years: 40 mg/kg/day in 3 divided doses pc x 20 days; max 1.95 gm; 6-12 years: 420 mg tid pc x 20 days
Tab: 210, 650 mg

▶ ***metronidazole*** **(not for use in 1st; B in 2nd, 3rd)(G)** 750 mg tid x 5-10 days
Pediatric: 35-50 mg/kg/day in 3 divided doses x 10 days
Flagyl *Tab:* 250*, 500*mg
Flagyl 375 *Cap:* 375 mg
Flagyl ER *Tab:* 750 mg ext-rel

▶ ***tinidazole*** **(C)** 2 gm daily x 3 days; take with food
Pediatric: <3 years: not recommended; ≥3 years: 50 mg/kg daily x 3 days; take with food; max 2 gm/day
Tindamax *Tab:* 250*, 500*mg

Comment: Other than for use in the treatment of *giardiasis* and *amebiasis* in pediatric patients older than 3 years-of-age, safety and effectiveness of ***tinidazole*** in pediatric patients have not been established. ***tinidazole*** is excreted in breast milk in concentrations similar to those seen in serum and can be detected in breast milk for up to 72 hours following administration. Interruption of breastfeeding is recommended during ***tinidazole*** therapy and for 3 days following the last dose.

▶ ***paromomycin*** 25-35 mg/kg/day in 3 divided doses x 5-10 days
Pediatric: same as adult
Humatin *Cap:* 250 mg

AMEBIASIS (EXTRA-INTESTINAL)

▶ ***chloroquine phosphate*** **(C)(G)** 1 gm PO daily x 2 days; then 500 mg daily x 2 to 3 weeks or 200-250 mg IM daily x 10-12 days (when oral therapy is impossible); use with intestinal amebicide

Pediatric: see mfr pkg insert
Aralen *Tab:* 500 mg; *Amp:* 50 mg/ml (5 ml)

AMEBIC LIVER ABSCESS

ANTI-INFECTIVES

- ***metronidazole*** **(C)(G)** 250 mg tid or 500 mg bid or 750 mg daily x 7 days
  Pediatric: <12 years: not recommended; ≥12 years: same as adult
  Flagyl *Tab:* 250*, 500*mg
  Flagyl 375 *Cap:* 375 mg
  Flagyl ER *Tab:* 750 mg ext-rel
- ***tinidazole*** **(C)** 2 gm once daily x 3-5 days; take with food
  Pediatric: <3 years: not recommended; ≥3 years: 50 mg/kg once daily x 3-5 days; take with food; max 2 gm/day
  Tindamax *Tab:* 250*, 500*mg
  Comment: Other than for use in the treatment of *giardiasis* and *amebiasis* in pediatric patients older than 3 years-of-age, safety and effectiveness of ***tinidazole*** in pediatric patients have not been established. ***Tinidazole*** is excreted in breast milk in concentrations similar to those seen in serum and can be detected in breast milk for up to 72 hours following administration. Interruption of breastfeeding is recommended during ***tinidazole*** therapy and for 3 days following the last dose.

AMENORRHEA: SECONDARY

- ***estrogen+progesterone*** **(X)**
  Premarin (*estrogen*) 0.625 mg daily x 25 days; then 5 days off; repeat monthly
  Provera (*progesterone*) 5-10 mg last 10 days of cycle; repeat monthly
- ***estrogen replacement*** **(X)**
  see ***Menopause***
- ***human chorionic gonadotropin*** 5,000-10,000 units IM x 1 dose following last dose of menotropins
  Pregnyl *Vial:* 10,000 units (10 ml) w. diluent (10 ml)
- ***medroxyprogesterone*** **(X)** *Monthly***:** 5-10 mg last 5-10 days of cycle; begin on the 16th or 21st day of cycle; repeat monthly; *One-time only:* 10 mg once daily x 10 days
  Amen *Tab:* 10 mg
  Provera *Tab:* 2.5, 5, 10 mg
- ***norethindrone*** **(X)** 2.5-10 mg daily x 5-10 days
  Aygestin *Tab:* 5 mg
- ***progesterone, micronized*** **(X)(G)** 400 mg q HS x 10 days
  Prometrium *Cap:* 100, 200 mg
  Comment: Administration of ***progesterone*** induces optimum secretory transformation of the ***estrogen***-primed endometrium. Administration of ***progesterone*** is contraindicated with breast cancer, undiagnosed vaginal bleeding, genital cancer, severe liver dysfunction or disease, missed abortion, thrombophlebitis, thromboembolic disorders, cerebral apoplexy, and pregnancy.

AMYOTROPHIC LATERAL SCLEROSIS (ALS, LOU GEHRIG'S DISEASE)

PYRAZOLONE FREE RADICAL SCAVENGER

- ***edaravone*** recommended dosage is 60 mg as an IV infusion administered over 60 minutes; Initial treatment cycle: daily dosing for 14 days, followed by a 14-day drug-free period; Subsequent treatment cycles: daily dosing for 10 days out of 14-day periods, followed by 14-day drug-free periods

Radicava *IV soln:* 30 mg/100 ml single-dose polypropylene bag for IV infusion (sodium bisulfite)

Comment: Most common adverse reactions (at least 10%) are confusion, gait disturbance, and headache. There are no adequate data on the developmental risk associated with the use of **Radicava** in pregnancy. There are no data on the presence of ***edaravone*** in human milk or the effects on the breastfed infant. However, based on animal data, may cause embryo/fetal harm.

GLUTAMATE INHIBITOR

▻ ***riluzole*** 50 mg twice daily; take at least 1 hour before or 2 hours after a meal; measure serum aminotransferases before and during treatment

Exservan *Oral film:* 50 mg

Comment: **Exservan** ***(riluzole)*** an oral film formulation of the approved glutamate Inhibitor ***riluzole*** for the treatment of patients with amyotrophic lateral sclerosis (ALS) who have difficulty swallowing. Use of **Exservan** is not recommended in patients with baseline elevations of serum aminotransferase >5 times upper limit of normal (ULN); discontinue **Exservan** if there is evidence of liver dysfunction. Monitor patient for signs and symptoms of neutropenia and advise patients to report any febrile illness. Discontinue **Exservan** if interstitial lung disease develops. Co-administration of strong-to-moderate CYP1A2 inhibitors may increase **Exservan**-associated adverse reactions. Co-administration of strong to moderate CYP1A2 inducers may result in decreased **Exservan** efficacy. **Exservan**-treated patients who take other hepatotoxic drugs may be at increased risk for hepatotoxicity. Most common adverse reactions (incidence ≥5% and greater than placebo) have been oral hypoesthesia, asthenia, nausea, decreased lung function, hypertension, and abdominal pain. Based on animal data, **Exservan** may cause fetal harm. Decreased embryo/fetal viability, growth, and functional development was observed at clinically relevant doses. Women should be advised of a possible risk to the fetus associated with use of **Exservan** during pregnancy. There are no data on the presence of ***riluzole*** in human milk or effects on the breastfed infant. ***riluzole*** or its metabolites have been detected in milk of lactating animals. Developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for **Exservan** and any potential adverse effects on the breastfed infant from **Exservan** or from the underlying maternal condition.

ANAPHYLAXIS

Parenteral Corticosteroids *see* Appendix M. Parenteral Corticosteroids
Oral Corticosteroids *see* Appendix L. Oral Corticosteroids

▻ ***epinephrine*** **(C)(G)** 0.3-0.5 mg (0.3-0.5 ml of a 1:1000 soln) SC q 20-30 minutes as needed up to 3 doses
Pediatric: <2 years: 0.05-0.1 ml; 2-6 years: 0.1 ml; ≥6-12 years: 0.2 ml; All: q 20-30 minutes as needed up to 3 doses; ≥12 years: same as adult

ANAPHYLAXIS EMERGENCY TREATMENT KITS

▻ ***epinephrine*** **(C)** 0.3 ml IM or SC in thigh; may repeat if needed
Pediatric: 0.01 mg/kg SC or IM in thigh; may repeat if needed; <15 kg: not established; 15-30 kg: 0.15 mg; >30 kg: same as adult

Adrenaclick *Auto-injector:* 0.15, 0.3 mg (1 mg/ml; 1, 2/carton) (sulfites)
Auvi-Q *Auto-injector:* 0.15, 0.3 mg (1 mg/ml; 1/pck w. 1 non-active training device) (sulfites)
EpiPen *Auto-injector:* 0.3 mg (*epi* 1:1000, 0.3 ml (1, 2/carton) (sulfites)

EpiPen Jr *Auto-injector:* 0.15 mg (*epi* 1:2000, 0.3 ml) (1, 2/carton) (sulfites)
Symjepi *Prefilled syringe:* 0.3 mg (0.3 ml) single-dose for manual injection
Comment: Each **Symjepi** syringe is over-filled for stability purposes. More than half the solution remains in the syringe after use (and the syringe cannot be re-used).
Twinject *Auto-injector:* 0.15, 0.3 mg (epi 1:1000) (1, 2/carton) (sulfites)

➢ ***epinephrine*** plus ***chlorpheniramine*** **(C)** ***epinephrine*** 0.3 ml SC or IM *plus* 4 tabs ***chlorpheniramine*** by mouth
Pediatric: infants to 2 years: 0.05-0.1 ml SC or IM; ≥2-6 years: 0.15 ml SC or IM plus 1 tab chlor; ≥6-12 years: 0.2 ml SC or IM plus 2 tabs chlor; ≥12 years: same as adult
Ana-Kit: *Prefilled injector:* 0.3 ml epi 1:1000 for self-injection plus 4 x chlor 2 mg chew tabs

ANEMIA: BETA THALASSEMIA-ASSOCIATED

ERYTHROID MATURATION AGENT (EMA)

Comment: **Reblozyl** ***(luspatercept-aamt)*** is a first-in-class erythroid maturation agent (EMA) indicated for the treatment of beta thalassemia-associated anemia in adult patients who require regular red blood cell (RBC) transfusions. **Reblozyl** is not indicated for use as a substitute for RBC transfusions in patients who require immediate correction of anemia.

➢ ***luspatercept-aamt*** recommended starting dose is 1 mg/kg SC once every 3 weeks into the upper arm, abdomen, or thigh; divide doses requiring >1.2 ml reconstituted volume into separate similar volume injections and inject into separate sites; if multiple injections are required, use a new syringe and needle for each injection; review hemoglobin (Hgb) results prior to each administration; if the patient does not achieve a reduction in RBC transfusion burden after at least 2 consecutive doses (6 weeks) at the 1 mg/kg starting dose, increase the **Reblozyl** dose to 1.25 mg/kg; do not increase the dose beyond the maximum dose of 1.25 mg/kg; if an RBC transfusion occurs prior to dosing, the pre-transfusion Hgb must be considered for dosing purposes; if a planned administration of **Reblozyl** is delayed or missed, administer **Reblozyl** as soon as possible and continue dosing as prescribed, with at least 3 weeks between doses; if the pre-dose Hgb is ≥11.5 gm/dL, and the Hgb level is not influenced by recent transfusion, delay dosing until the Hgb is ≤11 gm/dL; if the patient experiences a response followed by a lack of, or loss of, response to **Reblozyl**, initiate a search for causative factors (e.g., a bleeding event); if typical causes for a lack or loss of hematologic response are excluded, follow dosing recommendations therapy (see mfr pkg insert) for management of patients with an insufficient response to **Reblozyl**; if the patient does not experience a decrease in transfusion burden after 9 weeks of treatment (administration of 3 doses) at the maximum dose level or if unacceptable toxicity occurs at any time, *discontinue* **Reblozyl**
Pediatric: safety and efficacy not established
Reblozyl *Vial:* 25, 75 mg, single-dose; pwdr for reconstitution and SC administration (see mfr pkg insert for reconstitution directions)
Comment: There is increased risk of thrombosis/thromboembolism in patients with beta thalassemia. Monitor patients receiving **Reblozyl** for signs and symptoms of thromboembolic events and institute treatment promptly. Monitor blood pressure (BP) during treatment and initiate antihypertensive treatment if necessary. The most common adverse reactions (incidence >10%) in patients with beta thalassemia have been headache, bone pain, arthralgia, fatigue, cough, abdominal pain, diarrhea, and dizziness. There are no available

data on **Reblozyl** use in pregnant females to inform a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. In animal reproduction studies, administration of ***luspatercept-aamt*** in pregnancy during the period of organogenesis resulted in adverse developmental outcomes, including embryo/fetal mortality, alterations to growth, and structural abnormalities at exposures (based on area under the curve [AUC]) above those occurring at the maximum recommended human dose (MRHD). Advise pregnant females of the potential embryo/fetal risk. Advise females of reproductive potential of the potential risk of embryo/fetal toxicity and to use effective contraception. Advise patient not to breastfeed. ***luspatercept-aamt*** has been detected in milk of lactating rats. When a drug is present in animal milk, it is likely that the drug will be present in human milk. There are no data on the presence of **Reblozyl** in human milk or effects on the breastfed infant. Because of the potential for serious adverse reactions, advise patients that breastfeeding is not recommended during treatment with **Reblozyl** and for 3 months after the last dose.

ANEMIA OF CHRONIC KIDNEY DISEASE (CKD)/ ANEMIA OF CHRONIC RENAL FAILURE (CRF)

PHOSPHATE BINDER

- **ferric citrate** *Iron Deficiency Anemia in Chronic Kidney Disease Not on Dialysis:* starting dose is 1 tablet 3 x/day with meals; adjust dose as needed to achieve and maintain hemoglobin goal, up to max 12 tabs/day; *Hyperphosphatemia in Chronic Kidney Disease on Dialysis:* starting dose is 2 tabs orally 3 x/day with meals; adjust dose by 1 to 2 tabs as needed to maintain serum phosphorus at target levels, up to max 12 tabs/day; dose can be titrated at 1 week or longer intervals
  Pediatric: <18 years: not recommended; ≥18 years: same as adult
  Aurexia *Tab:* 210 mg ***ferric iron*** (equivalent to 1 gm ***ferric citrate***)
  Comment: **Auryxia** is a phosphate binder indicated for the control of serum phosphorus levels in patients ≥18 years-of-age with chronic kidney disease (CKD) on dialysis. Ferric iron binds dietary phosphate in the GI tract and precipitates as ferric phosphate. This compound is insoluble and is excreted in the stool. **Auryxia** is also an iron replacement product indicated for the treatment of iron deficiency anemia in patients >18 years-of-age with chronic kidney (CKD) not on dialysis. Ferric iron is reduced from the ferric to the ferrous form by ferric reductase in the GI tract. After transport through the enterocytes into the blood, oxidized ferric iron circulates bound to the plasma protein transferrin, for incorporation into hemoglobin. **Auryxia** is contraindicated in iron overload syndromes (e.g., hemochromatosis). Monitor ferritin and TSAT. When clinically significant drug interactions are expected, consider separation of the timing of administration. Consider monitoring clinical responses or blood levels of the concomitant medication. The most common adverse reactions (incidence ≥5%) are discolored feces, diarrhea, constipation, nausea, vomiting, cough, abdominal pain, and hyperkalemia. There are no available data on **Auryxia** use in pregnancy to inform a drug-associated risk of major birth defects and miscarriage; however, an overdose of iron may carry a risk for spontaneous abortion, gestational diabetes and fetal malformation. There are no human data regarding effects of **Auryxia** on the breastfed infant. Accidental overdose of iron-containing products is a leading cause of fatal poisoning in children under 6 years-of-age. Keep this product out of reach of children. In case of accidental overdose, contact poison control center immediately and transfer to emergency care.

ERYTHROPOIESIS STIMULATING AGENTS (ESAS)

➢ ***darbepoetin alpha*** (erythropoiesis stimulating protein) **(C)** administer IV or SC q 1-2 weeks; do not increase more frequently than once per month; *Not currently receiving epoetin alpha:* initially 0.75 mcg/kg once weekly; adjust based on Hgb levels (target not to exceed 12 gm/dL); reduce dose if Hgb increases more than 1 gm/dL in any 2-week period; suspend therapy if polycythemia occurs; *Converting from* ***epoetin alpha*** *and for dose titration:* see mfr pkg insert
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Aranesp *Vial:* 25, 40, 60, 100, 150, 200, 300, 500 mcg/ml (single-dose) for IV or SC administration (preservative-free, albumin [human] or polysorbate 80)
Aranesp Singleject, **Aranesp Sureclick Singleject** *Prefilled syringe:* 25, 40, 60, 100, 150, 200, 300, 500 mcg (single-dose) for IV or SC administration (preservative-free, albumin [human] or polysorbate 80)

➢ ***peginesatide*** **(C)** use lowest effective dose; initiate when Hgb <10 gm/dL; do not increase dose more often than every 4 weeks; if Hgb rises rapidly (i.e., >1 gm/dL in 2 weeks or >2 gm/dL in 4 weeks), reduce dose by 25% or more; if Hgb approaches or exceeds 11 gm/dL, reduce or interrupt dose and then when Hgb decreases, resume dose at approximately 25% below previous dose; if Hgb does not increase by >1 gm/dL after 4 weeks, increase dose by 25%; if response is inadequate after a 12-week escalation period, use lowest dose that will maintain Hgb sufficient to reduce need for RBC transfusion; discontinue if response does not improve; *Not currently on ESA:* initially 0.04 mg/kg as a single IV or SC dose once monthly; *Converting from* ***epoetin alfa:*** administer first dose 1 week after last ***epoetin alfa***; *Converting from* ***darbepoetin alfa:*** administer first dose at next scheduled dose of ***darbepoetin alfa***
Pediatric: <12 years: not established; ≥12 years: use lowest effective dose
Omontys *Vial, single-use:* 2, 3, 4, 5, 6 mg (0.5 ml) (preservative-free); *Vial, multi-use:* 10, 20 mg (2 ml) (preservatives); *Prefilled syringe:* 2, 3, 4, 5, 6 mg (0.5 ml) (preservative-free)

ERYTHROPOIETIN HUMAN, RECOMBINANT

➢ ***epoetin alpha*** **(C)** individualize; initially 50-100 units/kg 3 x/week; IV (dialysis or nondialysis) or SC (nondialysis); usual max 200 units/kg 3 x/week (dialysis) or 150 units/kg 3 x/week (non-dialysis); target Hct 30-36%
Pediatric: <1 month: not recommended; ≥1 month: individualize; *Dialysis:* initially 50 units/kg 3 x/week IV or SC; target Hct 30-36%
Epogen *Vial:* 2,000, 3,000, 4,000, 10,000, 40,000 units/ml (1 ml) single-use for IV or SC administration (albumin [human]; preservative-free)
Epogen Multidose *Vial:* 10,000 units/ml (2 ml); 20,000 units/ml, (1 ml) for IV or SC administration (albumin [human]; benzoyl alcohol)
Procrit *Vial:* 2,000, 3,000, 4,000, 10,000, 40,000 units/ml (1 ml) single-use for IV or SC administration (albumin [human]) (preservative-free)
Procrit Multidose *Vial:* 10,000 units/ml (2 ml); 20,000 units/ml, (1 ml) for IV or SC administration (albumin [human]; benzoyl alcohol)

➢ ***epoetin alfa-epbx*** evaluate iron status before and during treatment and maintain iron repletion; correct or exclude other causes of anemia before initiating treatment *Patients with CKD: Initial dose (infants ≥1 month and children):* 50 units/kg 3 x/week; *Initial dose (≥18 years-of-age):* 50-100 units/kg 3 x/week; individualize maintenance dose; intravenous route recommended for patients on hemodialysis; *Patients on Zidovudine due to HIV-infection:* 100 units/kg 3 x/week; *Patients with Cancer on Chemotherapy:* 40,000 units once weekly or 150 units/kg 3 x weekly (adults); 600 Units/kg IV once weekly (pediatric patients >5 years); *Surgery Patients:* 300 units/kg once daily for 15 days or 600 units/kg once weekly

Retacrit *Vial:* 2,000, 3,000, 4,000, 10,000, 40,000 units/ml (1 ml), single-dose, for SC or IV infusion

Comment: **Retacrit** ***(epoetin alfa-epbx)*** is the first FDA-approved biosimilar to **Epogen/Procrit** ***(epoetin alfa)*** for the SC or IV infusion treatment of anemia caused by chronic kidney disease (CKD), chemotherapy, or ***zidovudine*** treatment for human immunodeficiency virus infection. **Retacrit** is also approved for use before and after surgery to reduce the potential need for blood transfusions due to blood loss during surgery. Common reported adverse side effects with **Retacrit** include high blood pressure, joint pain, muscle spasm, fever, and dizziness. Contraindications to **Retacrit** include uncontrolled hypertension, pure red cell aplasia (PRCA) that begins after treatment with **Retacrit** or other erythropoietin protein drugs, and serious allergic reactions to **Retacrit** or other ***epoetin alfa*** products. BBW: ESAs increase the risk of myocardial infarction, stroke, venous thromboembolism, thrombosis of vascular access, and tumor progression or recurrence, and death (see mfr pkg insert for the full BBW). Therefore, use the lowest **Retacrit** dose sufficient to reduce the need for red blood cell (RBC) transfusions and DVT prophylaxis is recommended. The limited available data on ***epoetin alfa*** use in pregnancy are insufficient to determine a drug-associated risk of adverse developmental outcomes. There is no information regarding the presence of ***epoetin alfa*** products in human milk or effects on the breastfed infant. Safety and effectiveness in pediatric patients <1 month-of age have not been established.

ANEMIA: FOLIC ACID DEFICIENCY

▶ ***folic acid*** **(A)(OTC)** 0.4-1 mg once daily

Comment: ***Folic acid (vitamin B9)*** 400 mcg daily is recommended during pregnancy to prevent neural tube defects. Women who have had a baby with a neural tube defect should take 400 mcg every day, even when not planning to become pregnant, and if planning to become pregnant should take 4 mg daily during the month before becoming pregnant until at least the 12th week of pregnancy.

ANEMIA: IRON DEFICIENCY (ADA)

Comment: Hemochromatosis and hemosiderosis are contraindications to iron therapy. **Iron** supplements are best absorbed when taken between meals and with **vitamin C**-rich foods. Excessive ***iron*** may be extremely hazardous to infants and young children. All vitamin and mineral supplements should be kept out of the reach of children. Untreated iron deficiency anemia (IDA) in pregnancy is associated with adverse maternal outcomes such as postpartum anemia. Adverse pregnancy outcomes associated with IDA include increased risk for preterm delivery and low birth weight.

IRON PREPARATIONS

▶ ***ferrous gluconate*** **(A)(G)** 1 tab once daily

Pediatric: <12 years: not recommended; ≥12 years: same as adult

Fergon (OTC)

Tab: iron 27 mg (240 mg as gluconate)

▶ ***ferric maltol*** 30 mg twice daily on an empty stomach (1 hour before or 2 hours after a meal); continue as long as necessary to replenish body iron stores; do not open, break, or chew

Pediatric: safety and efficacy not established

Accrufer *Cap:* 30 mg

Comment: **Accrufer *(ferric maltol)***, formerly **Feraccru,** is a non-salt formulation of ferric iron for the treatment of iron deficiency in adults. **Accrufer** is not absorbed systemically as an intact complex following oral administration. Maternal use in pregnancy is not expected to result in fetal exposure and breastfeeding is not expected to result in exposure of the infant.

➢ ***ferrous sulfate*** **(A)(G)**

Feosol Tablets (OTC) 1 tab tid-qid pc and HS
Pediatric: <6 years: use elixir; ≥6-12 years: 1 tab tid pc
Tab: iron 65 mg (200 mg as sulfate)
Feosol Capsules (OTC) 1-2 caps daily
Pediatric: not recommended
Cap: iron 50 mg (169 mg as sulfate) sust-rel
Feosol Elixir (OTC) 5-10 ml tid between meals
Pediatric: <1 year: not recommended; >1-11 year: 2.5-5 ml tid between meals; ≥12 years: same as adult
Elix: iron 44 mg (220 mg as sulfate) per 5 ml
Fer-In-Sol (OTC) 5 ml daily
Pediatric: <4 years, use drops; ≥4 years: 5 ml once daily
Syr: iron 18 mg (90 mg as sulfate) per 5 ml (480 ml)
Fer-In-Sol Drops (OTC)
Pediatric: <4 years: 0.6 ml daily; ≥4 years: use syrup
Oral drops: iron 15 mg (75 mg as sulfate) per 5 ml (50 ml)

ANEMIA: PERNICIOUS/MEGALOBLASTIC

Comment: Signs of **vitamin B12** deficiency include megaloblastic anemia, glossitis, paresthesias, ataxia, spastic motor weakness, and reduced mentation.

➢ ***vitamin B12 (cyanocobalamin)*** **(A)(G)** 500 mcg intranasally once a week; may increase dose if serum B-12 levels decline; adjust dose in 500 mcg increments

Nascobal Nasal Spray *Intranasal gel:* 500 mcg/0.1 ml (1.3 ml, 4 doses) (citric acid, benzalkonium chloride)

Comment: **Nascobal Nasal Spray** is indicated for maintenance of hematologic remission following IM B-12 therapy without nervous system involvement. Must be primed before each use.

ANESTHESIA: PROCEDURAL SEDATION

➢ ***remimazolam*** individualize and titrate **Byfavo** to desired clinical effect; 2.5 mg to 5 mg IV over 1-minute; if necessary, administer supplemental doses of 1.25 mg to 2.5 mg IV over 15 seconds; wait at least 2 minutes before administration of any supplemental dose; may be administered only by a qualified HCP who is trained in the administration of conscious sedation, who is not involved in the conduct of the diagnostic or therapeutic procedure, in an appropriate healthcare setting, equipped with supportive and resuscitative supplies and equipment
Pediatric: <18 years: not recommended; ≥18 years: same as adult

Byfavo *Vial:* 20 mg, single-patient, pwdr for reconstitution and intravenous push (IVP) administration

Comment: **Byfavo *(remimazolam)*** is an ultra-short-acting intravenous ***benzodiazepine*** sedative/anesthetic for the induction and maintenance of procedural sedation in adults undergoing procedures lasting 30 minutes or less. The administering personnel must be trained in the detection and management of airway obstruction, hypoventilation, and apnea, including the maintenance of a patent airway, supportive ventilation, and cardiovascular resuscitation. **Byfavo** has been associated with hypoxia, bradycardia, and hypotension. Continuously monitor vital signs during sedation and through the recovery

period. Resuscitative drugs, and age- and size-appropriate equipment for bag/valve/mask-assisted ventilation must be immediately available during administration of **Byfavo**. Concomitant use of benzodiazepines with opioid analgesics may result in profound sedation, respiratory depression, coma, and death. The sedative effect of intravenous **Byfavo** can be accentuated by concomitantly administered CNS depressant medications, including other benzodiazepines and ***propofol***. Continuously monitor patients for respiratory depression and depth of sedation. Sedating drugs, such as **Byfavo**, may cause confusion and over-sedation in the elderly; elderly patients generally should be observed closely. *Severe Hepatic Impairment:* reduced dosage may be indicated; titrate carefully to effect. Infants born to mothers using benzodiazepines during the later stages of pregnancy have been reported to experience symptoms of sedation. Although there are no data on the effects of **Byfavo** use in pregnant females, available data from published observational studies of pregnant females exposed to other benzodiazepines have not established a drug-associated risk of major birth defects, miscarriage, or adverse maternal or embryo/fetal outcomes. Breastfeeding females may pump and discard breast milk for 5 hours after treatment with **Byfavo**.

ANGINA PECTORIS: STABLE

➢ ***aspirin*** **(D)** 325 mg (range 75-325 mg) once daily
Comment: Daily ***aspirin*** dose is contingent upon whether the patient is also taking an anticoagulant or antiplatelet agent.

CALCIUM ANTAGONISTS

Comment: Calcium antagonists are contraindicated with history of ventricular arrhythmias, sick sinus syndrome, 2nd or 3rd degree heart block, cardiogenic shock, acute myocardial infarction, and pulmonary congestion.

➢ ***amlodipine*** **(C)(G)** 5-10 mg daily
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Norvasc *Tab:* 2.5, 5, 10 mg

➢ ***amlodipine benzoate*** recommended starting dose 5 mg orally once daily; max 10 mg once daily; small stature, fragile, or elderly patients, or patients with hepatic insufficiency may be started on 2.5 mg once daily
Pediatric: <6 years: not studied; ≥6 years: starting dose: 2.5-5 mg once daily
Katerzia *Oral susp:* 1 mg/ml (150 ml), keep refrigerated
Comment: **Katerzia** ***(amlodipine benzoate)*** is a calcium channel blocker in an oral suspension formulation indicated for the treatment of hypertension in adults and children ≥6 years-of-age, to lower blood pressure. Lowering blood pressure reduces the risk of fatal and nonfatal cardiovascular events, primarily strokes and myocardial infarctions. **Katerzia** is also indicated for adult patients with Coronary Artery Disease (CAD), Chronic Stable Angina (CSA), Vasospastic Angina (Prinzmetal's or Variant Angina), Angiographically Documented Coronary Artery Disease in patients without heart failure or an ejection fraction <40%, at the same dose as for blood pressure management (2.5-10 mg once daily).

➢ ***diltiazem*** **(C)(G)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Cardizem initially 30 mg qid; may increase gradually every 1-2 days; max 360 mg/day in divided doses
Tab: 30, 60, 90, 120 mg
Cardizem CD initially 120-180 mg daily; adjust at 1- to 2-week intervals; max 480 mg/day
Cap: 120, 180, 240, 300, 360 mg ext-rel

Cardizem LA initially 180-240 mg daily; titrate at 2 week intervals; max 540 mg/day
Tab: 120, 180, 240, 300, 360, 420 mg ext-rel
Cartia XT initially 180 mg or 240 mg once daily; max 540 mg once daily
Cap: 120, 180, 240, 300 mg ext-rel
Dilacor XR initially 180 mg or 240 mg once daily; max 540 mg once daily
Cap: 180, 240 mg ext-rel
Tiazac initially 120-180 mg daily; max 540 mg/day
Cap: 120, 180, 240, 300, 360, 420 mg ext-rel

▶ ***nicardipine*** **(C)(G)** initially 20 mg tid; adjust q 3 days; max 120 mg/day
Pediatric: not recommended
Cardene *Cap:* 20, 30 mg

▶ ***nifedipine*** **(C)(G)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Adalat CC initially 30 mg once daily; usual range 30-60 mg tid; max 90 mg/day
Tab: 30, 60, 90 mg ext-rel
Procardia initially 10 mg tid; titrate over 7-14 days: max 30 mg/dose and 180 mg/day in divided doses
Cap: 10, 20 mg
Procardia XL initially 30-60 mg daily; titrate over 7-14 days; max dose 90 mg/day
Tab: 30, 60, 90 mg ext-rel

▶ ***verapamil*** **(C)(G)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Calan 80-120 mg tid; increase daily or weekly if needed
Tab: 40, 80*, 120*mg
Calan SR initially 120 mg once daily; increase weekly if needed
Tab: 120, 180, 240 mg
Covera HS initially 180 mg q HS; titrate in steps to 240 mg; then to 360 mg; then to 480 mg if needed
Tab: 180, 240 mg ext-rel
Isoptin SR initially 120-180 mg in the AM; may increase to 240 mg in the AM; then 180 mg q 12 hours or 240 mg in the AM and 120 mg in the PM; then 240 mg q 12 hours
Tab: 120, 180*, 240*mg sust-rel

BETA-BLOCKERS

Comment: Beta-blockers are contraindicated with history of sick sinus syndrome (SSS), 2nd or 3rd degree heart block, cardiogenic shock, pulmonary congestion, asthma, moderate-to-severe COPD with FEV1 <50% predicted, patients with chronic bronchodilator treatment.

▶ ***atenolol*** **(D)(G)** initially 25-50 mg daily; increase weekly if needed; max 200 mg daily
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Tenormin *Tab:* 25, 50, 100 mg

▶ ***metoprolol succinate*** **(C)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Toprol-XL initially 100 mg in a single dose once daily; increase weekly if needed; max 400 mg/day
Tab: 25*, 50*, 100*, 200*mg ext-rel

▶ ***metoprolol tartrate*** **(C)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Lopressor (G) initially 25-50 mg bid; increase weekly if needed; max 400 mg/day
Tab: 25, 37.5, 50, 75, 100 mg

➢ ***nadolol*** **(C)(G)** initially 40 mg daily; increase q 3-7 days; max 240 mg/day
Pediatric: not recommended
Corgard *Tab:* 20*, 40*, 80*, 120*, 160*mg

➢ ***propranolol*** **(C)(G)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Inderal LA initially 80 mg daily in a single dose; increase q 3-7 days; usual range 120-160 mg/day; max 320 mg/day in a single dose
Cap: 60, 80, 120, 160 mg sust-rel
InnoPran XL initially 80 mg q HS; max 120 mg/day
Cap: 80, 120 mg ext-rel

NITRATES

Comment: Use a daily nitrate dosing schedule that provides a dose-free period of 14 hours or more to prevent tolerance. ***aspirin*** and ***acetaminophen*** may relieve nitrate-induced headache. *Isosorbide* is not recommended for use in MI and/or CHF. Nitrate use is a contraindication for using phosphodiesterase type 5 inhibitors: ***sildenafil*** **(Viagra)**, ***tadalafil*** **(Cialis)**, ***vardenafil*** **(Levitra)**.

➢ ***isosorbide dinitrate*** **(C)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Dilatrate-SR 40 mg once daily; max 160 mg/day
Cap: 40 mg sust-rel
Isordil Titradose initially 5-20 mg q 6 hours; maintenance 10-40 mg q 6 hours
Tab: 5, 10, 20, 30, 40 mg

➢ ***isosorbide mononitrate*** **(C)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Imdur initially 30-60 mg q AM; may increase to 120 mg daily; max 240 mg/day
Tab: 30*, 60*, 120 mg ext-rel
Ismo 20 mg upon awakening; then 20 mg 7 hours later
Tab: 20*mg

➢ ***nitroglycerin*** **(C)(G)**
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Nitro-Bid Ointment initially 1/2 inch q 8 hours; titrate in 1/2 inch increments
Oint: 2% (20, 60 gm)
Nitrodisc initially one 0.2-0.4 mg/Hr patch for 12-14 hours/day
Transdermal disc: 0.2, 0.3, 0.4 mg/hour (30, 100/carton)
Nitrolingual Pump Spray 1-2 sprays on or under tongue; max 3 sprays/15 minutes
Spray: 0.4 mg/dose (14.5 gm, 200 doses)
Nitromist 1-2 sprays at onset of attack, on or under the tongue while sitting; may repeat q 5 minutes as needed; max 3 sprays/15 minutes; may use prophylactically 5-10 minutes prior to exertion; do not inhale spray; do not rinse mouth for 5-10 minutes after use
Lingual aerosol spray: 0.4 mg/actuation (230 metered sprays)
Nitrostat 1 tab SL; may repeat q 5 minutes x 3
SL tab: 0.3 (1/100 gr), 0.4 (1/150 gr), 0.6 (1/4 gr) mg
Transderm-Nitro initially one 0.2 mg/hour or 0.4 mg/hour patch for 12-14 hours/day
Transdermal patch: 0.1, 0.2, 0.4, 0.6, 0.8 mg/hour

NON-NITRATE PERIPHERAL VASODILATOR

➢ ***hydralazine*** **(C)(G)** initially 10 mg qid x 2-4 days; then increase to 25 mg qid for remainder of first week; then increase to 50 mg qid; max 300 mg/day
Pediatric: <12 years: not recommended; ≥12 years: same as adult
Tab: 10, 25, 50, 100 mg