

KAPLAN
MEDICAL

USMLE
STEP 1
Lecture Notes
2016



Anatomy

Behavioral Science
and Social Sciences

Biochemistry and
Medical Genetics

Immunology and
Microbiology

Pathology

Pharmacology

Physiology

KAPLAN

MEDICAL

USMLE[®]
STEP 1
Lecture Notes
2016

Pharmacology

USMLE® is a joint program of the Federation of State Medical Boards (FSMB) and the National Board of Medical Examiners (NBME), neither of which sponsors or endorses this product.

This publication is designed to provide accurate information in regard to the subject matter covered as of its publication date, with the understanding that knowledge and best practice constantly evolve. The publisher is not engaged in rendering medical, legal, accounting, or other professional service. If medical or legal advice or other expert assistance is required, the services of a competent professional should be sought. This publication is not intended for use in clinical practice or the delivery of medical care. To the fullest extent of the law, neither the Publisher nor the Editors assume any liability for any injury and/or damage to persons or property arising out of or related to any use of the material contained in this book.

© 2016 by Kaplan, Inc.

Published by Kaplan Medical, a division of Kaplan, Inc.
750 Third Avenue
New York, NY 10017

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

Course ISBN: 978-1-5062-0773-5

All rights reserved. The text of this publication, or any part thereof, may not be reproduced in any manner whatsoever without written permission from the publisher. This book may not be duplicated or resold, pursuant to the terms of your Kaplan Enrollment Agreement.

Retail ISBN: 978-1-5062-0046-0

Kaplan Publishing print books are available at special quantity discounts to use for sales promotions, employee premiums, or educational purposes. For more information or to purchase books, please call the Simon & Schuster special sales department at 866-506-1949.

Editors

Craig Davis, Ph.D.

*Distinguished Professor Emeritus
University of South Carolina School of Medicine
Department of Pharmacology, Physiology, and Neuroscience
Columbia, SC*

Steven R. Harris, Ph.D.

*Associate Dean for Academic Affairs
Professor of Pharmacology
Kentucky College of Osteopathic Medicine
Pikeville, KY*

Contributors

Manuel A. Castro, MD, AAHIVS

*Diplomate of the American Board of Internal Medicine
Certified by the American Academy of HIV Medicine
Wilton Health Center (Private Practice)
Wilton Manors, FL*

Nova Southeastern University

*Clinical Assistant Professor of Medicine
Fort Lauderdale, FL*

LECOM College of Osteopathy

*Clinical Assistant Professor of Medicine
Bradenton, FL*

Laszlo Kerecsen, M.D.

*Professor of Pharmacology
Midwestern University AZCOM
Glendale, AZ*

Bimal Roy Krishna, Ph.D. FCP

*Professor and Director of Pharmacology
College of Osteopathic Medicine
Touro University, NV*

<http://medsouls4you.blogspot.com>

<http://medsouls4you.blogspot.com>

Contents

Preface	ix
Section I: General Principles	
Chapter 1: Pharmacokinetics	3
Chapter 2: Pharmacodynamics	19
Chapter 3: Practice Questions	29
Section II: Autonomic Pharmacology	
Chapter 1: The Autonomic Nervous System (ANS)	39
Chapter 2: Cholinergic Pharmacology	45
Chapter 3: Adrenergic Pharmacology	55
Chapter 4: Autonomic Drugs: Glaucoma Treatment and ANS Practice Problems	65
Chapter 5: Autonomic Drug List and Practice Questions	71
Section III: Cardiac and Renal Pharmacology	
Chapter 1: Diuretics	83
Chapter 2: Antihypertensives	91
Chapter 3: Drugs for Heart Failure	97
Chapter 4: Antiarrhythmic Drugs	101
Chapter 5: Antianginal Drugs	111
Chapter 6: Antihyperlipidemics	117
Chapter 7: Cardiac and Renal Drug List and Practice Questions	121



Section IV: CNS Pharmacology

Chapter 1: Sedative-Hypnotic-Anxiolytic Drugs	133
Chapter 2: Alcohols	137
Chapter 3: Drugs Used for Depression, Bipolar Disorders, and Attention Deficit Hyperactivity Disorder (ADHD)	139
Chapter 4: Drugs Used in Parkinson Disease and Psychosis	143
Chapter 5: Anticonvulsants	149
Chapter 6: Drugs Used in Anesthesia	153
Chapter 7: Opioid Analgesics	159
Chapter 8: Drugs of Abuse	163
Chapter 9: CNS Drug List and Practice Questions	167

Section V: Antimicrobial Agents

Chapter 1: Antibacterial Agents	179
Chapter 2: Antifungal Agents	195
Chapter 3: Antiviral Agents	199
Chapter 4: Antiprotozoal Agents	207
Chapter 5: Antimicrobial Drug List and Practice Questions	209

Section VI: Drugs for Inflammatory and Related Disorders

Chapter 1: Histamine and Antihistamines	221
Chapter 2: Drugs Used in Gastrointestinal Dysfunction	223
Chapter 3: Drugs Acting on Serotonergic Systems	227
Chapter 4: Eicosanoid Pharmacology	229
Chapter 5: Drugs Used for Treatment of Rheumatoid Arthritis	235

Chapter 6: Drugs Used for Treatment of Gout	237
Chapter 7: Glucocorticoids	239
Chapter 8: Drugs Used for Treatment of Asthma	241
Chapter 9: Inflammatory Disorder Drug List and Practice Questions	245

Section VII: Drugs Used in Blood Disorders

Chapter 1: Anticoagulants	259
Chapter 2: Thrombolytics	263
Chapter 3: Antiplatelet Drugs	265
Chapter 4: Blood Disorder Drug List and Practice Questions	267

Section VIII: Endocrine Pharmacology

Chapter 1: Drugs Used in Diabetes	273
Chapter 2: Steroid Hormones	279
Chapter 3: Antithyroid Agents	285
Chapter 4: Drugs Related to Hypothalamic and Pituitary Hormones . . .	287
Chapter 5: Drugs Used for Bone and Mineral Disorders	289
Chapter 6: Endocrine Drug List and Practice Questions	291

Section IX: Anticancer Drugs

Chapter 1: Anticancer Drugs	299
Chapter 2: Anticancer Drug Practice Questions	305

Section X: Immunopharmacology

Chapter 1: Immunopharmacology	309
Chapter 2: Immunopharmacology Practice Questions	311



Section XI: Toxicology

Chapter 1: Toxicology	315
Chapter 2: Toxicology Practice Questions	321
Index	323

Preface

These volumes of Lecture Notes represent the most-likely-to-be-tested material on the current USMLE Step 1 exam.

We want to hear what you think. What do you like about the Notes? What could be improved? Please share your feedback by e-mailing us at medfeedback@kaplan.com.

Best of luck on your Step 1 exam!

Kaplan Medical