

美国医师执照考试

FIRST AID™

USMLE STEP 1

习题与解析

第3版

- Nearly 1,000 board-style questions and answers •
- Includes one complete practice examination •
- Detailed explanations of both correct and incorrect answers •
- Chapter arrangement matches *First Aid for the USMLE Step 1* •

TAO LE • JAMES A. FEINSTEIN



北京大学医学出版社

美国医师执照考试

FIRST AID™

USMLE STEP 1

习题与解析

第3版

SENIOR EDITORS

Tao Le, MD, MHS

Associate Clinical Professor
Chief, Section of Allergy and Clinical Immunology
Department of Medicine
University of Louisville

James A. Feinstein, MD

Clinical Instructor, Section of General Pediatrics
The Children's Hospital Colorado
Research Fellow
Primary Care Research Program
University of Colorado School of Medicine

EDITORS

Mark W. Ball, MD

Resident
The James Buchanan Brady Urological Institute
The Johns Hopkins Hospital

Kimberly Kallianos

Harvard Medical School
Class of 2012

Annie Dude, MD

Resident
Department of Obstetrics and Gyn
Duke University Medical Center

Cesar Raudel Padilla

University of Rochester School of Medicine
Class of 2012

Rebecca L. Hoffman, MD

Resident
Department of General Surgery
Hospital of the University of Pennsylvania

Anthony R. Attkopf, MD

Public Health candidate
University College of Health Professions and
Social Work

Mark Robert Jensen

University of Rochester School of Medicine
Class of 2012

James Yeh, MD

Resident
Department of Medicine
Cambridge Hospital, Cambridge Health Alliance



北京大学医学出版社

图书在版编目 (CIP) 数据

美国医师执照考试 USMLE Step 1 习题与解析 / (美) 李 (Le, T.),
(美) 法因施泰因 (Feinstein, J. A.) 编. 3 版. —北京: 北
京大学医学出版社, 2013. 7

ISBN 978-7-5659-0566-7

I. ①美… II. ①李… ②法… III. ①医学—医师—资
格考试—美国—题解—英文 IV. ①R-44

中国版本图书馆 CIP 数据核字 (2013) 第 065968 号

TAO LE, JAMES A. FEINSTEIN

First Aid Q&A for the USMLE Step 1, Third Edition

ISBN 978-0-07-174402-7

Copyright © 2012 by TAO LE.

All Rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including without limitation photocopying, recording, taping, or any database, information or retrieval system, without the prior written permission of the publisher.

This authorized Bilingual edition is jointly published by McGraw-Hill Education (Asia) and Peking University Medical Press. This edition is authorized for sale in the People's Republic of China only, excluding Hong Kong SAR, Macao SAR and Taiwan.

Copyright © 2013 by McGraw-Hill Asia Holdings (Singapore) PTE.LTD and Peking University Medical Press.

版权所有。未经出版人事先书面许可, 对本出版物的任何部分不得以任何方式或途径复制或传播, 包括但不限于复印、录制、录音, 或通过任何数据库、信息或可检索的系统。

本授权双语版由麦格劳-希尔(亚洲)教育出版公司和北京大学医学出版社合作出版。此版本经授权仅限在中华人民共和国境内(不包括香港特别行政区、澳门特别行政区和台湾)销售。

版权© 2013 由麦格劳-希尔(亚洲)教育出版公司与北京大学医学出版社所有。

本书封面贴有 McGraw-Hill 公司防伪标签, 无标签者不得销售。

北京市版权局著作权合同登记号: 01-2013-2770

美国医师执照考试 USMLE Step 1 习题与解析 (第 3 版)

编 写: TAO LE, JAMES A. FEINSTEIN

出版发行: 北京大学医学出版社 (电话: 010-82802230)

地 址: (100191) 北京市海淀区学院路 38 号 北京大学医学部院内

网 址: <http://www.pumpress.com.cn>

E - mail: booksale@bjmu.edu.cn

印 刷: 北京画中画印刷有限公司

经 销: 新华书店

责任编辑: 冯智勇 责任校对: 齐 欣 责任印制: 张京生

开 本: 889mm×1194mm 1/16 印张: 49 字数: 1375 千字

版 次: 2013 年 7 月第 3 版 2013 年 7 月第 1 次印刷

书 号: ISBN 978-7-5659-0566-7

定 价: 185.00 元

版权所有, 违者必究

(凡属质量问题请与本社发行部联系退换)

出版说明

美国医师执照考试 (United States Medical Licensing Examination, USMLE) 是针对全世界各国医学院的学生或毕业生, 欲到美国从医的执照考试, 考试全部为选择题, 采用计算机考试。考试分为:

Step 1 (第一阶段): 考查医学基础学科知识, 包括解剖学 Anatomy, 生理学 Physiology, 生物化学 Biochemistry, 微生物学 Microbiology, 病理学 Pathology, 药理学 Pharmacology, 遗传学 Genetics, 营养学 Nutrition, 神经科学 Neuroscience 等。

Step 2 (第二阶段):

(1) 临床医学知识 (Clinical Knowledge, CK): 包括内科学 Medicine, 外科学 Surgery, 妇产科学 Obstetrics and Gynecology, 儿科学 Pediatrics, 神经病学 Neurology, 家庭医学 Family Medicine, 急诊医学 Emergency Medicine, 预防医学 Preventive Medicine 等。

(2) 临床技能 (Clinical Skill, CS): 要通过 Step 1、Step 2 及 TOEFL 之后才能报考, 主要是考查考生的临床实践操作知识。

Step 3 (第三阶段): 测试考生的实际工作能力。内容包括采集病史、体格检查、诊断、治疗措施, 以及医疗法规等。

USMLE 在北京、上海和广州设有考点, 在中国大陆可参加 USMLE Step 1 和 USMLE Step 2 CK 的考试。考试介绍及报名情况可参见 <http://www.ecfmg.com>

为了帮助有志于参加 USMLE 的考生更好地复习, 北京大学医学出版社全面引进了 McGraw Hill 公司的两个著名 USMLE 复习品牌丛书: PreTest 系列、FIRST AID 系列。这两套丛书经过多次再版, 受到世界各地考生的欢迎。本次引进的均为其最新版本。

当前, 我国很多医学院校在进行英文授课、考试的改革, 本书对国内从事英语授课、考试的教师和学生也有重要的参考价值。为广大的医学生和医务工作者比较中美医学教育和自己掌握的知识提供参考。同时, 该书也是学习专业英语的好教材。

北京大学医学出版社

NOTICE

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The authors and the publisher of this work have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication. However, in view of the possibility of human error or changes in medical sciences, neither the authors nor the publisher nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they disclaim all responsibility for any errors or omissions or for the results obtained from use of the information contained in this work. Readers are encouraged to confirm the information contained herein with other sources. For example and in particular, readers are advised to check the product information sheet included in the package of each drug they plan to administer to be certain that the information contained in this work is accurate and that changes have not been made in the recommended dose or in the contraindications for administration. This recommendation is of particular importance in connection with new or infrequently used drugs.

DEDICATION

To the contributors to this and future editions, who took time to share their knowledge, insight, and humor for the benefit of students, residents, and clinicians.

and

To our families, friends, and loved ones, who supported us in the task of assembling this guide.

AUTHORS

KIRSTEN AUSTAD

Fellow
Edmond J. Safra Center for Ethics
Harvard University

EIKE BLOHM

Johns Hopkins University School of Medicine
Class of 2012

BENJAMIN CAPLAN, MD

Resident
Department of Family Medicine
Boston University

PO-HAO CHEN

Harvard Medical School
Class of 2012

LAUREN DE LEON, MD

Intern
Department of Internal Medicine
The Alpert Medical School of Brown University

PHILIP EYE

Boston University School of Medicine
Class of 2012

JIM GRIFFIN, MD

Resident
Department of Surgery and Surgical Oncology
Johns Hopkins Hospital

JOHN HEGDE

Harvard Medical School
Class of 2012

EMILY HEIKAMP

Johns Hopkins University School of Medicine
Class of 2014

THOMAS ROBERT HICKEY, MD

Resident
Department of Anesthesiology
Brigham and Women's Hospital

HENRY R. KRAMER, MD

Resident
Department of Medicine
Massachusetts General Hospital

THOMAS LARDARO

Johns Hopkins University School of Medicine
Class of 2012

KATHERINE LATIMER

Johns Hopkins University School of Medicine
Class of 2012

JOSEPH LIAO

Boston University School of Medicine
Class of 2012

JERRY LOO

University of Southern California Keck School of Medicine
Class of 2012

AYA MICHAELS, MD

Resident
Department of Radiology
Brigham and Women's Hospital

SOMALA MUHAMMED, MD

Resident
Department of General Surgery
Baylor College of Medicine

BEHROUZ NAMDARI, MD

Resident
Department of Psychiatry
Duke University Medical Center

TASHERA PERRY, MD

Resident
Department of Obstetrics and Gynecology
The University of Illinois at Chicago School of Medicine

CHRISTOPHER ROXBURY

Johns Hopkins University School of Medicine
Class of 2012

NEEPA SHAH

Boston University
Class of 2012

BETHANY STRONG

Harvard Medical School
Class of 2012

SEENU SUSARLA, MD, DMD, MPH

Resident
Department of Oral & Maxillofacial Surgery
Massachusetts General Hospital

JEFFREY TOSOIAN

Johns Hopkins University School of Medicine
Class of 2012

JACKSON VANE, MD

Resident
Department of Pediatrics
University of California, Irvine School of Medicine

DANIEL J. VERDINI, MD

Resident
Department of Internal Medicine
University of Nevada School of Medicine at Reno

MARC E. WALKER

Harvard Medical School
Class of 2012

PREFACE

With the third edition of *First Aid Q&A for the USMLE Step 1*, we continue our commitment to providing students with the most useful and up-to-date preparation guides for the USMLE Step 1. This new edition represents an outstanding effort by a talented group of authors and includes the following:

- Almost 1000 high-yield USMLE-style questions based on the top-rated *USMLERx Qmax Step 1 Test Bank* (www.usmlerx.com)
- Concise yet complete explanations to correct and incorrect answers
- Questions organized by general principles and organ systems
- Seven full-length test blocks simulate the actual exam experience
- High-yield images, diagrams, and tables complement the questions and answers
- Organized as a perfect complement to *First Aid for the USMLE Step 1*

We invite you to share your thoughts and ideas to help us improve *First Aid Q&A for the USMLE Step 1*. See How to Contribute, p. xiii.

Louisville
Denver

Tao Le
James A. Feinstein

ACKNOWLEDGMENTS

This has been a collaborative project from the start. We gratefully acknowledge the thoughtful comments and advice of the medical students, international medical graduates, and faculty who have supported the authors in the continuing development of *First Aid Q&A for the USMLE Step 1*.

For support and encouragement throughout the project, we are grateful to Thao Pham, Louise Petersen, Selina Franklin, Jonathan Kirsch, and Vikas Bhushan. Thanks to our publisher, McGraw-Hill, for the valuable assistance of their staff. For enthusiasm, support, and commitment to this challenging project, thanks to our editor, Catherine Johnson. For outstanding editorial work, we thank Mary Dispenza and Emma D. Underdown. A special thanks to Rainbow Graphics for remarkable production work.

Louisville
Denver

Tao Le
James A. Feinstein

HOW TO CONTRIBUTE

This edition of *First Aid Q&A for the USMLE Step 1* incorporates hundreds of contributions and changes suggested by faculty and student reviewers. We invite you to participate in this process. We also offer paid internships in medical education and publishing ranging from three months to one year (see next page for details). Please send us your suggestions for:

- Corrections or enhancements to existing questions and explanations
- New high-yield questions
- Low-yield questions to remove

For each entry incorporated into the next edition, you will receive a \$10 gift certificate, as well as personal acknowledgment in the next edition. Diagrams, tables, partial entries, updates, corrections, and study hints are also appreciated, and significant contributions will be compensated at the discretion of the authors.

The preferred way to submit entries, suggestions, or corrections is via our blog:

www.firstaidteam.com

Alternatively, you can email us at: firstaidteam@yahoo.com. All entries become property of the authors and are subject to editing and reviewing. Please verify all data and spellings carefully. In the event that similar or duplicate entries are received, only the first entry received will be used. Include a reference to a standard textbook to facilitate verification of the fact. Please follow the style, punctuation, and format of this edition if possible.

INTERNSHIP OPPORTUNITIES

The First Aid Team is pleased to offer part-time and full-time paid internships in medical education and publishing to motivated medical students and physicians. Internships may range from three months (e.g., a summer) up to a full year. Participants will have an opportunity to author, edit, and earn academic credit on a wide variety of projects, including the popular *First Aid* and *USMLERx* series. Writing/editing experience, familiarity with Microsoft Word, and Internet access are desired. For more information, e-mail a résumé or a short description of your experience along with a cover letter to **firstaidteam@yahoo.com**.

CONTENTS

Authors	vii
Preface	ix
Acknowledgments	xi
How to Contribute	xiii

SECTION I GENERAL PRINCIPLES 1

Chapter 1	Behavioral Science	3
Chapter 2	Biochemistry	17
Chapter 3	Embryology	53
Chapter 4	Microbiology	71
Chapter 5	Immunology	101
Chapter 6	Pathology	123
Chapter 7	Pharmacology	141

SECTION II ORGAN SYSTEMS 159

Chapter 8	Cardiovascular	161
Chapter 9	Endocrine	197
Chapter 10	Gastrointestinal	233
Chapter 11	Hematology-Oncology	271
Chapter 12	Musculoskeletal	307
Chapter 13	Neurology	339
Chapter 14	Psychiatry	363
Chapter 15	Renal	379
Chapter 16	Reproductive	415
Chapter 17	Respiratory	451

Test Block 1	489
Test Block 2	527
Test Block 3	563
Test Block 4	599
Test Block 5	633
Test Block 6	669
Test Block 7	705
Appendix: Common Laboratory Values	741
Index	743
About the Authors	767

SECTION I

General Principles

- ▶ Behavioral Science
- ▶ Biochemistry
- ▶ Embryology
- ▶ Microbiology
- ▶ Immunology
- ▶ Pathology
- ▶ Pharmacology

CHAPTER 1

Behavioral Science

QUESTIONS

1. Researchers investigating the development of the idiopathic inflammatory myopathies (IIMs) such as polymyositis read that vitamin D may act as an immunomodulator that reduces the development and severity of autoimmune diseases. Given that many Americans are vitamin D deficient, the researchers design an observational study to assess the impact of vitamin D supplementation on IIM symptom severity. Subjects are surveyed at time 0 and after two years, and the results are listed in the chart. Which equation represents the chance of symptom improvement in subjects who took vitamin D supplements relative to subjects who did not take vitamin D supplements?

	Vitamin D supplement taken	Vitamin D supplement not taken
Symptoms improved	50	60
Symptoms not improved	300	400

Reproduced, with permission, from USMLERx.com.

- (A) $(50 / 300) / (60 / 400)$
 (B) $(50 / 350) / (60 / 460)$
 (C) $(50 / 460) / (60 / 300)$
 (D) $(60 / 400) / (50 / 300)$
 (E) $(60 / 460) / (50 / 350)$
2. A 16-year-old boy is brought to the pediatrician by his mother because of excessive daytime sleepiness. She states that over the past six months she has received numerous phone calls from the boy's school informing her that her son sleeps throughout all of his afternoon classes and is often difficult to arouse at the end of class. The patient reports that occasionally when he wakes up in the morning he cannot move for extended periods. He says that sometimes when he laughs at jokes or becomes nervous before a test, he feels as if he cannot move his legs. He admits that he has even fallen to the floor because of leg weakness while laughing. Which of the following is the best choice for treating this patient?
- (A) Chloral hydrate
 (B) Hydroxyzine
 (C) Modafinil
 (D) Prochlorperazine maleate
 (E) Zolpidem
3. A 52-year-old woman is being treated by a male psychiatrist for depression stemming from her recent divorce. Recently, the patient has been coming to her appointments dressed up and wearing expensive perfumes. She has also started to flirt with the doctor. The patient's demeanor and appearance had initially reminded the psychiatrist of his aunt. He is uncomfortable with the patient's new behavior patterns and tells her so. She becomes very angry and storms out of the office, canceling all remaining appointments on her way out. Which of the following behaviors is an example of negative transference?
- (A) The doctor seeing the patient as his aunt
 (B) The doctor telling the patient he is uncomfortable
 (C) The patient being angry with the doctor
 (D) The patient dressing up for appointments
 (E) The patient flirting with the doctor
4. A 28-year-old woman presents to her primary care physician because of depressed mood. She states that she has been depressed for as long as she can remember and feels bad about herself almost all of the time. She states that her only happy moments were during her honeymoon two years ago, and during a ski trip in college when she felt "on top of the world." She confides that for a couple weeks last month she felt life was no longer worth living. At that time, she was having extreme difficulty

sleeping, a complete loss of energy, and a lack of appetite. A review of the patient's history shows that during the past two years she has seen a physician for complaints of stomach upset, fatigue, headaches, and an unintentional 3.6-kg (8-lb) weight gain. Physical examination and results of laboratory tests are within normal limits. Which of the following is an adverse effect the patient may experience during the course of the treatment of this illness?

- (A) Agranulocytosis
 - (B) Anorgasmia
 - (C) Arrhythmia
 - (D) Polyuria
 - (E) Stevens-Johnson syndrome
5. A 6-year-old girl is brought to the pediatrician by her mother because of fecal incontinence. The mother says this behavior usually occurs at school. According to Freud, which stage of psychosexual development has this child failed to progress through?
- (A) Anal stage
 - (B) Genital stage
 - (C) Latency stage
 - (D) Oral stage
 - (E) Phallic stage
6. A 20-year-old man became very agitated at a party, and as a result was brought to the emergency department. In the waiting room he is belligerent and uncooperative. A physical examination reveals fever, tachycardia, horizontal nystagmus, hyperacusis, and pupils that are 3 mm in diameter bilaterally. Which of the following substances is most likely causing the behavioral changes and physical findings exhibited by this patient?
- (A) Alcohol
 - (B) Amphetamines
 - (C) Cocaine
 - (D) Lysergic acid diethylamide
 - (E) Nicotine
 - (F) Phencyclidine

7. The figure below is a common representation used in studying the characteristics of a test's results. Using the letters in the figure, which of the following accurately describes the prevalence of the disease?

		<i>Disease</i>	
		+	−
<i>Test</i>	+	W	X
	−	Y	Z

Reproduced, with permission, from USMLERx.com.

- (A) $(W+X) / (W+X+Y+Z)$
 - (B) $(W+Y) / (W+X+Y+Z)$
 - (C) $W / (W+X+Y+Z)$
 - (D) $W / (X+Y+Z)$
 - (E) $W / (X+Z)$
8. A 75-year-old man is recovering in the hospital from a left-sided below-the-knee amputation. Three days after the surgery, the patient suddenly develops chest pain and shortness of breath that last for 20 minutes. His pain medication is increased, which improves the pain but not the shortness of breath. X-ray of the chest is negative for a pulmonary embolus, so the medical team decides to monitor him expectantly. The next day, a similar episode of shortness of breath and chest pain occurs. The patient then sustains cardiac arrest and dies. Autopsy reveals multiple pulmonary emboli. The family threatens to sue for malpractice for mismanaged postoperative care. Which of the following is necessary to prove malpractice?
- (A) A patient directly suffers harm
 - (B) A physician's presence at the time of injury
 - (C) Intent to harm
 - (D) Proof beyond reasonable doubt
 - (E) Use of standard procedures