

原著 Lee A. Fleisher, MD

循证临床麻醉学

Evidence-Based Practice of Anesthesiology

美方主译
Ling Qun Hu, Renyu Liu

中方主译
杭燕南, 周大春

审校 杭燕南

第2版



人民卫生出版社

原 著 Lee A. Fleisher, MD

循证临床麻醉学

Evidence-Based Practice of
Anesthesiology

第 2 版

人民卫生出版社

Evidence – Based Practice of Anesthesiology, 2e

Lee A. Fleisher

ISBN: 978 – 1 – 4160 – 5996 – 7

Copyright © 2009 by Saunders. All rights reserved.

Authorized Simplified Chinese translation edition published by the Proprietor.

ISBN: 981 – 272 – 448 – 6/978 – 981 – 272 – 448 – 9

Copyright © 2010 by Elsevier (Singapore) Pte Ltd. All rights reserved.

Elsevier (Singapore) Pte Ltd.

3 Killiney Road

#08 – 01 Winsland House I

Singapore 239519

Tel: (65) 6349 – 0200

Fax: (65) 6733 – 1817

First Published 2010

2010 年初版

Printed in China by People's Medical Publishing House under special agreement with Elsevier (Singapore) Pte Ltd. This edition is authorized for sale in China only, excluding Hong Kong SAR and Taiwan. Unauthorized export of this edition is a violation of the Copyright Act. Violation of this law is subject to civil and criminal penalties.

本书中文简体版由人民卫生出版社与 Elsevier (Singapore) Pte Ltd. 合作出版。本版仅限在中国境内(不包括香港特别行政区及台湾)出版及销售。未经许可之出口,视为违反版权法,将受法律之制裁。

图书在版编目(CIP)数据

循证临床麻醉学/Ling Qun Hu 等主译. —2 版. —北京:

人民卫生出版社, 2010. 4

ISBN 978 – 7 – 117 – 12722 – 6

I. ①循… II. ①L… III. ①麻醉学 IV. ①R614

中国版本图书馆 CIP 数据核字(2010)第 036583 号

门户网: www.pmph.com	出版物查询、网上书店
卫人网: www.ipmph.com	护士、医师、药师、中医师、卫生资格考试培训

版权所有,侵权必究!

图字:01 – 2010 – 1872

循证临床麻醉学

第 2 版

主 译: Ling Qun Hu 等

出版发行: 人民卫生出版社(中继线 010 – 59780011)

地 址: 北京市朝阳区潘家园南里 19 号

邮 编: 100021

E – mail: pmph@pmph.com

购书热线: 010 – 67605754 010 – 65264830

010 – 59787586 010 – 59787592

印 刷: 北京人卫印刷厂

经 销: 新华书店

开 本: 889 × 1194 1/16 印张: 29 插页: 8 字数: 1145 千字

版 次: 2007 年 6 月第 1 版 2010 年 4 月第 2 版第 2 次印刷

标准书号: ISBN 978 – 7 – 117 – 12722 – 6/R · 12723

定 价: 78.00 元

打击盗版举报电话: 010 – 59787491 E-mail: WQ@pmph.com

(凡属印装质量问题请与本社销售中心联系退换)

译者

原 著 Lee A. Fleisher, MD

美方主译 Ling Qun Hu, MD; Renyu Liu, MD, MS, PhD

中方主译 杭燕南, MD; 周大春, MD, MS

美方副主译 Yong G. Peng, MD, PhD; Yun Xia, MD, PhD

中方副主译 俞卫锋, MD, PhD; 连庆泉, MD, PhD

审 校 杭燕南

中方翻译 (以姓氏汉语拼音为序)

卜 岚	仓 静	曹 瑜	陈 杰	陈 洁	陈祥明	丛 露	邓小明	丁 佳	费国雄
皋 源	杭燕南	洪方晓	胡 江	胡 倩	黄 晟	江 伟	江烨岚	姜陆洋	柯敬东
李 潺	李 剑	李 泉	李晓强	连庆泉	梁 敏	刘邵华	吕 丹	吕 然	罗 艳
牛 静	乔 庆	邱必军	裘 燕	沈晓芳	时亚平	苏殿三	孙海涛	陶 星	田 鸣
王海宏	王宏伟	王 平	王 强	王珊娟	王祥瑞	王英伟	闻大翔	熊 军	徐春红
徐铭军	许 华	轩 泓	薛富善	薛庆生	薛张纲	叶雪飞	于布为	俞 青	俞卫锋
郁 庆	张 晖	张金旻	张马忠	张晓光	张晓庆	张晓怡	张雨洁	赵贤元	赵 欣
郑 行	周大春	周海燕	周全红	周仁龙	祝继洪	左云霞			

美方校译 (以姓氏汉语拼音为序)

Yuejie Gu(顾跃捷), Jian Hang(杭键), Ling Qun Hu(胡灵群), Naixi Li(李迺曦), Hong Liu(刘虹), Renyu Liu(刘仁玉), Xin Liu(刘欣), Jin Meng(孟进), Jonathan Pan(潘智勇), Yong G. Peng(彭勇刚), Weike Tao(陶为科), Hongyu Teng(滕宏宇), Tina Leung(田穗荣), Chuan-yao Tong(童传耀), Hong Wang(汪红), Yun Xia(夏云), Zhongcong Xie(谢仲淙), Shiyi Abila-Yao(姚诗怡), Hsi Chiao(赵曦), Pei-shan Zhao(赵培山), Jie Zhou(周捷), Michelle Z Pulido(朱叶), Zhiyi Zuo(左志义)

敬告

本书的作者、译者及出版者已尽力使书中的知识符合出版当时国内普遍接受的标准。但医学在不断地发展,随着科学研究的不断探索,各种诊断分析程序和临床治疗方案以及药物使用方法都在不断更新。强烈建议读者在使用本书涉及的诊疗仪器或药物时,认真研读使用说明,尤其对于新的产品更应如此。出版者拒绝对因参照本书任何内容而直接或间接导致的事故与损失负责。

需要特别声明的是,本书中提及的一些产品名称(包括注册的专利产品)仅仅是叙述的需要,并不代表作者推荐或倾向于使用这些产品;而对于那些未提及的产品,也仅仅是因为限于篇幅不能一一列举。

本着忠实于原著的精神,译者在翻译时尽量不对原著内容做删节。然而由于著者所在国与我国的国情不同,因此一些问题的处理原则与方法,尤其是涉及宗教信仰、民族政策、伦理道德或法律法规时,仅供读者了解,不能作为法律依据。读者在遇到实际问题时应根据国内相关法律法规和医疗标准进行适当处理。

前言

循证临床麻醉学(Evidence-Based Practice of Anesthesiology)是遵循科学证据的临床麻醉医学,应用最新和最有意义的科学信息,包括系统综述(Systematic review)、荟萃分析(Meta analysis)及临床实践指南(Clinical practice guidelines)。循证临床麻醉学与传统麻醉学的主要区别是在于应用经验医学的同时,麻醉医师针对患者的实际病情进行详细的术前评估,正确选择麻醉方法,根据循证文献证据,解决有关问题,甚至是疑难问题,最大限度地预防或降低围术期并发症发病率,确保病人麻醉和围术期的舒适、安全。

第1版《循证临床麻醉学》出版后,受到了中国广大麻醉医师的欢迎。内容新颖、实用,具有重要的临床意义。原著 Lee A. Fleisher 教授是美国费城宾夕法尼亚大学医院的麻醉科和 ICU 主任,有很深的学术造诣,他对中国麻醉学界非常友好。并且,上海交通大学医学院的前身由四所大学合并而成,其中圣约翰大学医学院在新中国成立前是美国宾夕法尼亚大学的中国分校。2009 年 Fleisher 教授访问了上海交通大学医学院。为此,我们所翻译的《循证临床麻醉学》第2版,是历史的巧合和缘分,我们感到无上的荣幸。

《循证临床麻醉学》第2版共有73章,包括麻醉前评估、麻醉方法、疑难病人和特殊手术麻醉、疼痛治疗和术后 ICU 处理,内容非常丰富,每章中有文献循证、临床指南和作者建议等,临床麻醉医生在临床实践中碰到难题,可以方便地参考,从中受益。但是,由于中美两国的人种、社会伦理、医疗制度和麻醉方法等尚存在一定差异,某些章节中涉及的麻醉问题可能不完全适合中国的实际情况,请读者务必结合临床实践灵活运用。

中方翻译人员都是硕士、博士和主治医师、副主任医师,并由副主任医师和主任医师审校,由我们二人修改和校对,再由美国华人麻醉医师校对后定稿。最后在杭州举行定稿会,集体审稿,完成此书。虽然经过反复多次校对,也不免有疏漏,敬请读者批评指正。

本书出版是中国麻醉医生和美国华人麻醉医生团结友谊的结晶。在翻译过程中由苏殿三和周仁龙博士担任秘书工作,并得到上海交通大学医学院附属仁济医院王祥瑞主任、王珊娟主任和浙江大学附属邵逸夫医院钟泰迪主任的帮助。中华麻醉学会主任委员于布为教授和副主任委员薛张纲教授的大力支持,以及人民卫生出版社汪仁学编辑的指导,在此,我们表示衷心的感谢。

杭燕南 周大春

2009 年 11 月

中文版第2版前言

本书从2007年第1版面世至第2版的发行,仅仅3年时间。清晰地表明了循证医学及时反映现代医学发展以及缩短了从科研到临床实践之间的时间差。对照第1版,这些领域的最新动向和发展趋势一目了然,对临床和科研的促进作用便不言而喻。新版《循证临床麻醉学》增加了一些新的章节以及对许多新的临床问题的讨论。

循证医学已经成为当今世界医学的主流。循证医学是一系列以临床结局(Outcome)为参照标准来检验包括治疗和检测在内的各项临床措施的临床研究的集合。其实,循证医学源远流长,有学者提出,循证医学源于中国的古代^{1,2}。作为华裔,对此深感骄傲。同时,也为2400年前扁鹊(公元前407—前310)的“毒酒”和1800年前华佗(公元110—207)的“麻沸散”的失传而惋惜,为500年前由法国医生 Ambroise Paré(公元1510—1590)发明的、盛行了200多年的放血麻醉这样医学上的弯路而遗憾。由此引出人们对如何共享人类知识财富的思考。我们应该有一个科学客观的报告体系和交流平台。1990年由美国杜克大学的 David Eddy 医生首次提出了“循证”(Evidence-based)这个术语。从此,循证医学迅猛发展,包括临床指南在内的各种临床文献随之在以美国为代表的西方发达国家制定和实施,形成了一个空前未有的交流平台。本书正好为这个平台提供了阶梯,它用实例阐明了循证医学的含义,是一本难得的、值得精读的书。令人欣慰的是,很多中国麻醉医生已把它作为一本重要的参考书,踏上了通往这个平台的台阶。

本书的再版是及时的。其中的每一个章节都是这一临床问题的最新进展和系统综述。它的翻译工作是艰辛的。书中非教条式的论述,大量的现代流行病学和医学统计学概念和方法的应用,以及前沿甚至超前沿的临床处理方式或方法的介绍,使得翻译工作远远超越了语言学范畴,需要翻译人员具有良好的语言和学术造诣,沿用第1版的中美合译模式实为必要。这支云集了20余所中美著名大学教授们的翻译队伍为本书翻译的精确性做出了巨大的贡献,本书凝结了一大批国内著名麻醉学专家及多位有着中美麻醉科研和临床背景的美国华人麻醉医生的智慧和辛勤。在中美同仁的反复推敲后,我们引用了一些词的新译法,有待国内同行们的商榷。

本书在内容以及写作形式上有别于大家熟知的教科书或参考文献。读者需要一些流行病学和统计学的知识,并具有评价文献的能力。书中所提出的临床热点问题和最终的循证结果,有些可能是出乎预料或“不合逻辑”,甚至和日常临床实践或现有的教科书观点相悖的,可能“看完后觉得更困惑”。而“对数据的归纳分析没有到位,最终给出的建议也是似是而非”的读书心得,恰如其分地反映出了本书让读者去思考和探讨的初衷。这些悬而未决的和百般困惑的临床问题,有待于我们填补空缺和深入研究。只读最后的作者建议显然是品尝不到这个滋味的。本书最大的特点是问题在先,引人思考,深入探讨,推出结论。这让我们联想到做数学求证题,形式像,感觉也像——看似枯燥,却是乐在其中。书中有一小部分是国内尚未涉及的临床问题或是美国医学管理上的问题。有些医学管理的具体讨论细节,确实有不符合中国国情的。但作为一个模板,它们对中国正在进行的医疗改革中有关投入产出的问题,可能会有启发。医学应该包括医学科学和医学管理。科学部分具有可重复性和共识性,是大家讨论的基础,而为在临床上实现医学科学论证得出的结论的医学管理,不仅中美间有距离,美国各医院之间也不一样。中美之间的不同主要是体现在医学管理上的,而不是医学科学上的。充分认识这一点,会有益于阅读外文翻译或

原版医学著作。当然,也由于种种原因,译文乃至原文偶有疏忽之处,凡遇译文词不达意的,请以所属的参考文献为准,并敬请谅解。

最后,我们要再次感谢人民卫生出版社的大力支持、中国麻醉医生和美国麻醉医生的通力合作和无私奉献。诚挚地希望中国的麻醉学界和美国的麻醉学界同仁们一起,走在循证医学的前列,成为整个医学界的楷模。谨代表全体参加本书译校成员,献上 Fleisher 教授第2版的《循证临床麻醉学》中文版。

Ling Qun Hu, MD(胡灵群), 美国芝加哥

Renyu Liu, MD, PhD(刘仁玉), 美国费城

2010年2月

¹ Sackett DL. Evidence based medicine: How to practice and teach EBM. 2nd ed. London: Churchill Livingstone, 2000.

² Edward P. Monico, M. D., J. D. The Impact Of Evidence-Based Medicine And Evolving Technology On The Standard Of Care In Emergency Medicine. Department of Surgery, Section of Emergency Medicine, Yale University.

中文版第1版前言

有史书记载的中国麻醉医学源于古代名医华佗(公元110—207)。他的麻沸散所包含的理念,即:遗忘、镇痛、肌松、主张多种药物的平衡使用,与当今麻醉学的理念有着惊人的一致性。在美国,麻醉为医学界尊敬和推崇追溯至 Crawford Long 医生的首次成功使用乙醚全身麻醉手术的1842年3月30日。为纪念这项特殊的医学发明,1933年起每年3月30日被定为美国医生节。163年后,也就是美国麻醉医师学会(ASA)成立100周年的2005年6月21日,华盛顿邮报特别发表了专栏文章¹阐述了麻醉医学在整个医学领域中独一无二的地位,美国麻醉界的不断努力和反复临床循证,显著降低了原本高持不下的并发症率和死亡率,它的发展模式成了当今美国其他医学领域安全医疗的楷模。本书不是一本中国同仁常见的教科书或手册,它旨在指导住院医生如何以正确的途径获取知识、更新知识以及在临床上运用这些知识。本书的英文版²是包括美国西北大学芬伯格医学院等著名学府麻醉专业训练中的必读图书。相信中文读者们在阅读领悟本书精华的同时,能够了解到当今世界特别是美国麻醉医学的现状和动态,在华佗的故土上,为人类医学再树丰碑。

这本《循证临床麻醉医学》涉及了术前准备和检查、术中监测和处理、术后恢复和镇痛三个阶段。本书跨越各个年龄组的麻醉,也包括了重症医学在内的各麻醉专科。它的读者群将是广泛的,尤其适用于内科外科负责手术前后的医生,麻醉医生和重症监护医生。无论是临床实践,麻醉教学,还是医学研究,读者们都将体会到它的价值。

本书由中国麻醉医生分工翻译,随后全部由美国华人麻醉专业执照医生(Board-Certified Anesthesiologists)校对,由于中美麻醉领域现实中存在的差异,在翻译基础上进行一定程度的编辑,既保证医学术语的翻译到位和字词语义的精确表达,也让中文读者能联系到自己的临床实践更利于理解。它是中美华人麻醉医生共同无偿劳动的结晶,为中外医学专家通力翻译合作开创了先例,更是翻译在形式上的一种尝试。

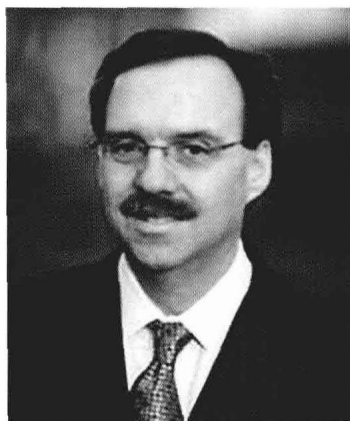
在本书出版之际,我要特别感谢人民卫生出版社的大力支持、中国麻醉学界同仁的通力合作和美籍华人麻醉学专家的无私奉献。我为翻译小组成员的使命感、迫切感和敬业精神所感动和激励。中方主译、浙江大学医学院附属邵逸夫医院的周大春主任和他的同事、助理编辑严春燕医生,花费了大量的时间和精力,使得本书得以在短时间内和大家见面,没有他们付出,结果是不可想象的。浙江大学医学院附属第二医院的周海燕主任和四川大学医学院华西医院的左云霞主任给了本书很大的帮助,浙江大学医学院附属第二医院、助理编辑陈祥明医生的最后整理,为出版增色不少。我在此深表谢意。

Ling Qun Hu, MD(美)

¹ Joseph T. Hallinan, Washington Post, "Once Seen as Risky, One Group of Doctors Changes Its Ways-Anesthesiologists Now Offer Model of How to Improve Safety, Lower Premiums", June 21st, 2005.

² Lee A. Fleisher, Evidence-Based Practice of Anesthesiology, Saunders, 2004.

Lee A. Fleisher 教授简介



Lee A. Fleisher 教授于 1981 年在美国宾夕法尼亚大学获得分子生物学学士学位,于 1986 年在纽约州立石溪大学获得医学博士学位。现任美国宾夕法尼亚大学麻醉学和内科学教授,宾夕法尼亚大学附属医院麻醉与重症治疗科主任,美国宾夕法尼亚大学资格审查委员会主席以及医学遴选委员会副主席。他最近还被选入美国科学院医学研究所。目前为止,全美仅有约 15 个麻醉医生获此殊荣,其中约半数为 65 岁以上并已退休。他目前的研究包括两个方面:①围术期风险评估以及减少风险策略;②健康服务研究。主要注重于心脏病人进行非心脏手术时的风险评估。他是美国心脏病学会/美国心脏协会围术期的心血管评估指南工作组的主任,还是美国外科治疗和护理改良规划(Surgical Care Improvement Project)筹划指导委员会的成员之一。该规划是美国医疗社保与医疗救助服

务中心和外科学会以及麻醉学会的一项全国性合作成果。他对门诊手术的风险评估也非常感兴趣。目前,他已经发表 80 多篇经过同行专家评审的科学论文,127 篇综述以及有关章节。主编和共同主编了包括《循证临床麻醉学》,《麻醉要素》,《麻醉学质量、安全、风险和预后》,《米勒麻醉学(第 6 版)》,《麻醉疑难病症》以及《预后管理的药物优化》等 10 部专著。他还是美国麻醉学《Anesthesiology》杂志顾问教授以及编委。Fleisher 教授所在的宾夕法尼亚大学是美国的第一所综合性大学,是美国常春藤大学之一。其麻醉与重症治疗科成立于 50 年前,具有培养杰出的临床、科研、教学以及麻醉学领导人才、国际麻醉医生和优秀科研人员的长久历史。

Fleisher 教授近来非常重视和中国麻醉学界同仁的交流,在他的大力支持下,该科启动了宾大中国麻醉协作计划,旨在进一步建立和加强和中国麻醉同仁之间的学术交流,共同培养麻醉学界的未来领导者。2009 年他带领该科的其他 5 名医生分别在中华麻醉学年会、上海交通大学医学院、复旦大学上海医学院以及温州医学院进行学术交流。此后不久,来自中国各地多所院校和医院的 14 名麻醉学专家到该科进行了为期 3 天的友好访问、讲学和交流。

循证医学是当代医学的特征之一,也是未来医学的发展方向。麻醉学是一门相对较年轻的学科,还有很多临床问题未得到解决,存在颇多争议。Fleisher 教授所著的《循证临床麻醉学》针对这些问题根据现有临床证据进行深入探讨,指导临床医生如何根据临床证据在临床治疗中作出正确决定,引导临床以及科研人员就重要临床问题进行深思,对未来麻醉学的健康发展具有深远的意义。

Renyu Liu(刘仁玉) MD,MS,PhD

**Department of Anesthesiology and Critical Care
Hospital of the University of Pennsylvania**

Ling Qun Hu(胡灵群) MD

**Department of Anesthesiology
Northwestern Memorial Hospital
Feinberg School of Medicine, Northwestern University**

中方翻译人员名单和单位 (以人数为序)

上海交通大学医学院附属仁济医院

杭燕南 王祥瑞 陈 杰 王珊娟 闻大翔 皋 源 周仁龙 苏殿三
俞 青 胡 江 李 潺 牛 静 吕 丹 赵贤元 丁 佳 张晓怡

浙江大学医学院附属邵逸夫医院

周大春 裘 燕 郑 行 陈 洁 王 平 王海宏 徐春红 吕 然
乔 庆 王宏伟 祝继洪 江烨岚 梁 敏

首都医科大学附属北京友谊医院

田 鸣 刘邵华 洪方晓 张雨洁 赵 欣 姜陆洋 陶 星 柯敬东

上海交通大学附属第六人民医院

江 伟 张 晖 周全红 轩 泓 胡 倩

第二军医大学附属东方肝胆医院

俞卫锋 邱必军 费国雄 张金旻

温州医学院附属第二医院

连庆泉 时亚平 黄 晟 叶雪飞

浙江大学医学院附属第二医院

周海燕 陈祥明 李 剑

北京中国医学科学院整形外科医院

薛富善 熊 军 王 强

复旦大学附属中山医院

薛张纲 仓 静 张晓光

上海交通大学医学院附属瑞金医院

于布为 薛庆生 罗 艳

上海交通大学医学院附属新华医院

王英伟 丛 露 沈晓芳

同济大学医学院附属同济医院

张晓庆 郁 庆 卜 岚

上海交通大学医学院附属上海儿童医学中心

张马忠 曹 瑜

四川大学华西医院

左云霞 李晓强

第二军医大学长海医院

邓小明 许 华

北京中国医学科学院肿瘤医院

孙海涛

首都医科大学附属北京妇产医院

徐铭军

同济大学医学院附属上海市第十人民医院

李 泉

美国华人专业执照麻醉医 生名单和单位 (除专门注明外)

Hsi Chiao(赵曦)	Univ. of Texas Southwestern Medical Center; Dallas, Texas
Yuejie Gu(顾跃捷)	Dept. of Neurosurgery, Neurology, Hospital of the Univ. of Pennsylvania, Philadelphia, Pennsylvania
Jian Hang(杭键)	Rapides Regional Medical Center, Alexandria, Louisiana
Ling Qun Hu(胡灵群)	Northwestern Memorial Hospital, Feinberg School of Medicine, Northwestern Univ. , Chicago, Illinois
Tina Leung(田穗荣)	St. Vincent Catholic Medical Centers at Manhattan, New York Medical College, New York, New York
Naixi Li(李迺曦)	Lawrence Hospital Center, Bronxville, New York
Hong Liu(刘虹)	Univ. of California Davis Health System, Sacramento, California
Renyu Liu(刘仁玉)	Hospital of the Univ. of Pennsylvania, Philadelphia, Pennsylvania
Xin Liu(刘欣)	St. Francis Hospital, Wilmington, Delaware
Jin Meng(孟进)	Univ. of Texas Southwestern Medical Center, Dallas, Texas
Jonathan Pan(潘智勇)	Hospital of Univ. of Pennsylvania, Philadelphia, Pennsylvania
Yong G. Peng(彭勇刚)	Shands Hospital at the Univ. of Florida, Gainesville, Florida
Weike Tao(陶为科)	Univ. of Texas Southwestern Medical Center, Dallas, Texas
Hongyu Teng(滕宏宇)	Northwest Community Hospital, Arlington Heights, Illinois
Chuan Yao Tong(童传耀)	Wack Forest Univ. Health Science, Winston-Salem, North Carolina
Hong Wang(汪红)	Harper Univ. Hospital, Wayne State Univ. , Detroit, Michigan
Yun Xia(夏云)	Ohio State Univ. Medical Center, Columbus, Ohio
Zhongcong Xie(谢仲淙)	Massachusetts General Hospital. Harvard Medical School, Boston, Massachusetts
Shiyi Abia-Yao(姚诗怡)	Central Penn Interventional Pain Medicine, Winfield, Pennsylvania
Pei-shan Zhao(赵培山)	Tufts Medical Center, Tufts Univ. School of Medicine, Boston, Massachusetts
Jie Zhou(周捷)	Brigham and Women's Hospital, Harvard Medical School Boston, Massachusetts
Michelle Z Pulido(朱叶)	Internal Medicine Service(内科学), Southwest Medical Associate, Las Vegas, Nevada
Zhiyi Zuo(左志义)	School of Medicine, Univ. of Virginia, Charlottesville, Virginia

作者

Sherif Afifi, MD, FCCM, FCCP

Associate Professor of Anesthesiology & Surgery
Chief, Division of Critical Care
Director of Critical Care Fellowship
Feinberg School of Medicine
Northwestern University
Chicago, Illinois

Seth Akst, MD, MBA

Assistant Professor
Department of Anesthesiology and Critical Care Medicine
George Washington University Medical Center
Washington, DC

James F. Arens, MD

Chair, Committee of Practice Parameters
American Society of Anesthesiology
Park Ridge, Illinois

Valerie A. Arkoosh, MD

Professor of Clinical Anesthesiology
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Barbara Armas, MD

Clinical Assistant Professor of Medicine
Robert Wood Johnson University Hospital
New Brunswick, New Jersey

Michael A. Ashburn, MD, MPH

Professor of Anesthesiology and Critical Care
Medicine
University of Pennsylvania School of Medicine
Director of Pain Medicine and Palliative Care
Penn Pain Medicine Center
Tuttleman Center at Penn Medicine at Rittenhouse
Philadelphia, Pennsylvania

John G.T. Augoustides, MD, FASE

Assistant Professor
Department of Anesthesiology and Critical Care
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Michael Aziz, MD

Assistant Professor
Department of Anesthesiology and Peri-Operative
Medicine
Oregon Health and Science University
Portland, Oregon

Daniel Bainbridge, MD, FRCPC

Assistant Professor and TEE Director
Division of Cardiac Anaesthesia
Department of Anaesthesia and Perioperative Medicine
London Health Sciences Centre
University of Western Ontario
London, Ontario, Canada

Jane C. Ballantyne, MD, FRCA

Associate Professor of Anesthesiology
Chief, Division of Pain Medicine
Department of Anesthesia and Critical Care
Massachusetts General Hospital
Harvard University
Boston, Massachusetts

Sheila R. Barnett, MD

Associate Professor of Anesthesiology
Harvard Medical School
Department of Anesthesiology and Critical Care
Beth Israel Deaconess Hospital Medical Center
Boston, Massachusetts

Joshua A. Beckman, MD, MS

Director, Cardiovascular Medicine Fellowship
Brigham and Women's Hospital
Assistant Professor of Medicine
Harvard Medical School
Boston, Massachusetts

Yaakov Beilin, MD

Associate Professor of Anesthesiology, and Obstetrics,
Gynecology and Reproductive Sciences
Vice-Chair for Quality
Co-Director of Obstetric Anesthesia
Department of Anesthesiology
The Mount Sinai School of Medicine
New York, New York

Elliott Bennett-Guerrero, MD

Associate Professor
Department of Anesthesiology
Duke University Medical Center
Durham, North Carolina

Sanjay M. Bhananker, MBBS, MD, DA, FRCA

Assistant Professor
Department of Anesthesiology
University of Washington School of Medicine
Harborview Medical Center
Seattle, Washington

T. Andrew Bowdle, MD, PhD

Professor of Anesthesiology and Pharmaceutics
Chief of the Division of Cardiothoracic Anesthesiology
Department of Anesthesiology
University of Washington
Seattle, Washington

Lynn M. Broadman, MD

Clinical Professor of Anesthesiology
University of Pittsburgh Medical School
Children's Hospital of Pittsburgh
Pittsburgh, Pennsylvania

Daniel R. Brown, MD, PhD

Assistant Professor of Anesthesiology
Department of Anesthesiology
Mayo Clinic College of Medicine
Rochester, Minnesota

Robert H. Brown, MD, MPH

Professor
Department of Anesthesiology, Physiology and Radiology
Johns Hopkins University School of Medicine
Baltimore, Maryland

Robert A. Caplan, MD

Department of Anesthesiology
Virginia Mason Medical Center
Seattle, Washington

Jeffrey L. Carson, MD

Richard C. Reynolds Professor of Medicine
Chief, Division of General Internal Medicine
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School
New Brunswick, New Jersey

Maurizio Cereda, MD

Assistant Professor
Department of Anesthesiology and Critical Care
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Mark A. Chaney, MD

Associate Professor
Director of Cardiac Anesthesia
Department of Anesthesia and Critical Care
University of Chicago
Chicago, Illinois

Davy Cheng, MD, MSc, FRCPC, FCAHS

Professor and Chair
Department of Anaesthesia and Perioperative Medicine
London Health Sciences Centre and St. Joseph's
Health Care
University of Western Ontario
London, Ontario, Canada

Grace L. Chien, MD

Associate Professor
Department of Anesthesiology
Oregon Health and Sciences University
Chief of Anesthesiology Service
Veterans Affairs Medical Center
Portland, Oregon

Vinod Chinnappa, MBBS, MD, FCARCSI

Clinical Fellow
Department of Anesthesia
University of Toronto
Toronto Western Hospital
University Health Network
Toronto, Ontario, Canada

Frances Chung, FRCPC

Professor
Department of Anesthesia
University of Toronto
Toronto Western Hospital
University Health Network
Toronto, Ontario, Canada

Neal H. Cohen, MD, MPH, MS

Vice Dean for Academic Affairs
Professor of Anesthesia and Perioperative Care
University of California, San Francisco
School of Medicine
San Francisco, California

Nancy Collop, MD

Associate Professor of Medicine
Division of Pulmonary and Critical
Care Medicine
Director, The Johns Hopkins Sleep Disorders Center
Baltimore, Maryland

Richard T. Connis, PhD

Chief Methodologist
Committee on Standards and Practice Parameters
American Society of Anesthesiologists
Park Ridge, Illinois

Douglas B. Coursin, MD

Professor of Anesthesiology and Medicine
University of Wisconsin School of Medicine and
Public Health
Madison, Wisconsin

Stefan G. De Hert, MD, PhD

Professor of Anesthesiology
University of Antwerp
Vice-Chairman
Department of Anesthesiology
University Hospital Antwerp
Edegem, Belgium

Clifford S. Deutschman, MD, MS, FCCM

Professor of Anesthesiology and Critical Care
and Surgery
Director, Stavropoulos Sepsis Research Program
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Karen B. Domino, MD, MPH

Professor
Department of Anesthesiology
University of Washington School of Medicine
University of Washington Medical Center
Seattle, Washington

Richard P. Dutton, MD, MBA

Associate Professor of Anesthesiology
Chief, Trauma Anesthesiology
University of Maryland Medical Center,
Baltimore, Maryland

R. Blaine Easley, MD

Assistant Professor
Department of Anesthesiology and Critical
Care Medicine
Johns Hopkins Medical Center
Baltimore, Maryland

David M. Eckmann, PhD, MD

Horatio C. Wood Professor of Anesthesiology
and Critical Care
Associate Professor of Bioengineering
University of Pennsylvania
Philadelphia, Pennsylvania

Nabil Elkassabany, MD

Clinical Assistant Professor
Department of Anesthesiology and Critical Care
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

John E. Ellis, MD

Adjunct Professor
Department of Anesthesiology and Critical Care
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Kristin Engelhard, MD, PhD

Department of Anesthesiology
Johannes Gutenberg University
Mainz, Germany

Lucinda L. Everett, MD

Associate Professor
Harvard Medical School
Chief, Pediatric Anesthesia
Massachusetts General Hospital
Boston, Massachusetts

James Y. Findlay, MBChB, FRCA

Assistant Professor of Anesthesiology
Consultant, Anesthesiology and Critical Care Medicine
Department of Anesthesiology
Mayo Clinic
Rochester, Minnesota

Michael G. Fitzsimons, MD, FCCP

Instructor in Anesthesia
Fellowship Director, Adult Cardiothoracic Anesthesiology
Division of Cardiac Anesthesia
Department of Anesthesia and Critical Care
Harvard Medical School
Massachusetts General Hospital
Boston, Massachusetts

Lee A. Fleisher, MD, FACC, FAHA

Robert Dunning Dripps Professor and Chair
Department of Anesthesiology and Critical Care
Professor of Medicine
University of Pennsylvania School of Medicine,
Philadelphia, Pennsylvania

Nicole Forster, MD

Department of Anesthesiology
Johannes Gutenberg University
Mainz, Germany

Stephen E. Fremes, MD

Head, Division of Cardiac Surgery
Sunnybrook and Women's College Health Sciences Centre
Toronto, Ontario, Canada

Alan Gaffney, MBBCh

Registrar in Anaesthetics
University of Dublin
Dublin, Ireland

Tong J. Gan, MBBS, FRCA, FFARCSI

Professor
Department of Anesthesiology
Duke University Medical Center
Durham, North Carolina

Santiago Garcia, MD

Chief Cardiology Fellow
Division of Cardiovascular Medicine
University of Minnesota
Minneapolis, Minnesota

Adrian W. Gelb, MBChB

Professor
Department of Anesthesiology and Perioperative Care
University of California, San Francisco
San Francisco, California

Ralph Gertler, MD

Staff Anesthesiologist
Institute of Anesthesiology and Intensive Care
German Heart Centre of the State of Bavaria and the
Technical University Munich
München, Germany

Satyajeet Ghatge, MD

Consultant Anesthetist
University Hospital of North Staffordshire
Stoke on Trent, United Kingdom

Barbara S. Gold, MD

Associate Professor
Department of Anesthesiology
University of Minnesota Medical School
Minneapolis, Minnesota

Allan Gottschalk, MD, PhD

Associate Professor
Department of Anesthesiology and Critical Care Medicine
Johns Hopkins Medical Institutions
Baltimore, Maryland

Anil Gupta, MD, FRCA, PhD

Associate Professor
Department of Anesthesiology and Intensive Care
University Hospital
Örebro, Sweden

Veena Guru, MD

Research Fellow
Department of Surgery
University of Pittsburgh Medical School
Pittsburgh, Pennsylvania

Ashraf S. Habib, MBBCh, MSc, FRCA

Associate Professor
Department of Anesthesiology
Duke University Medical Center
Durham, North Carolina

Carin A. Hagberg, MD

Professor
Department of Anesthesiology
Director of Neuroanesthesia and Advanced Airway
Management
The University of Texas Medical School at Houston
Houston, Texas

Izumi Harukuni, MD

Assistant Professor
Department of Anesthesiology and Perioperative Medicine
Oregon Health and Science University
Portland, Oregon

Laurence M. Hausman, MD

Clinical Assistant Professor of
Anesthesiology
Mount Sinai School of Medicine
New York, New York

Diane E. Head, MD

Assistant Professor
Department of Anesthesiology
University of Wisconsin School of Medicine and
Public Health
Madison, Wisconsin

Robert S. Holzman, MD, FAAP

Associate Professor
Department of Anesthesia
Harvard Medical School
Boston Children's Hospital
Boston, Massachusetts

McCallum R. Hoyt, MD, MBA

Assistant Professor
Department of Anesthesia
Harvard Medical School
Brigham and Women's Hospital
Boston, Massachusetts

William E. Hurford, MD

Professor and Chair
Department of Anesthesiology
University of Cincinnati Academic
Health Center
Cincinnati, Ohio

Aaron Joffe, DO

Department of Anesthesiology
University of Wisconsin School of Medicine
and Public Health
Madison, Wisconsin

Edmund H. Jooste, MBChB

Assistant Professor
Department of Anesthesiology
University of Pittsburgh Medical School
Children's Hospital of Pittsburgh
Pittsburgh, Pennsylvania

Girish P. Joshi, MBBS, MD, FFARCSI

Professor of Anesthesiology and
Pain Management
Director of Perioperative Medicine and
Ambulatory Anesthesia
University of Texas Southwestern Medical Center
Dallas, Texas

Andrea Kurz, MD

Vice Chair
Department of Outcomes Research
Cleveland Clinic Foundation
Professor of Anesthesiology
Cleveland Clinic Lerner College of Medicine
Case Western Reserve University
Cleveland, Ohio

Martin J. London, MD

Professor of Clinical Anesthesia
University of California, San Francisco
Veterans Affairs Medical Center
San Francisco, California

Lynette Mark, MD

Associate Professor
Department of Anesthesiology & Critical Care Medicine
and Department of Otolaryngology/Head and
Neck Surgery
Johns Hopkins University
Baltimore, Maryland

Lynne G. Maxwell, MD

Associate Director, Division of General Anesthesia
Department of Anesthesiology and Critical
Care Medicine
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

Edward O. McFalls, MD, PhD

Professor of Medicine
Division of Cardiology
Veterans Affairs Medical Center
Minneapolis, Minnesota

Michael L. McGarvey, MD

Department of Neurology
Hospital of the University of Pennsylvania
University of Pennsylvania Medical Center
Philadelphia, Pennsylvania

Kathryn E. McGoldrick, MD

Professor and Chair
Department of Anesthesiology
New York Medical College
Director of Anesthesiology
Westchester Medical Center
Valhalla, New York

Christopher T. McKee, DO

Attending Physician
Department of Anesthesiology
Nationwide Children's Hospital
Columbus, Ohio

R. Yan McRae, MD

Staff Anesthesiologist
Portland Veterans Affairs Medical Center
Assistant Professor
Department of Anesthesiology and Perioperative Medicine
Oregon Health and Science University
Portland, Oregon

Steven R. Messé, MD

Assistant Professor
Department of Neurology
University of Pennsylvania School of Medicine
Philadelphia, Pennsylvania

Amy L. Miller, MD, PhD

Fellow, Cardiovascular Medicine
Brigham and Women's Hospital
Instructor in Medicine
Harvard Medical School
Boston, Massachusetts

Marek Mirski, MD, PhD

Vice-Chair
Department of Anesthesiology and Critical
Care Medicine
Director
Neuroscience Critical Care Units
Chief
Division of Neuroanesthesiology
Co-Director
Johns Hopkins Comprehensive Stroke Center
Associate Professor of Anesthesiology and
Critical Care Medicine, Neurology, and Neurosurgery
Johns Hopkins Medical Institutions
Baltimore, Maryland

Vivek Moitra, MD

Assistant Professor
Department of Anesthesiology
Columbia University College of Physicians and Surgeons
New York, New York

Terri G. Monk, MD, MS

Professor
Department of Anesthesiology
Duke University Health System
Durham Veterans Affairs Medical Center
Durham, North Carolina

Michael F. Mulroy, MD

Clinical Associate Professor of Anesthesiology
University of Washington School of Medicine
Department of Anesthesiology
Virginia Mason Medical Center
Seattle, Washington