

# Acneiform Eruptions in Dermatology



Joshua A. Zeichner  
Editor

# Acneiform Eruptions in Dermatology

A Differential Diagnosis

 Springer

*Editor*

Joshua A. Zeichner, M.D.  
Assistant Professor  
Director of Cosmetic and Clinical Research  
Dermatology Department  
Mount Sinai Medical Center  
New York, NY, USA

ISBN 978-1-4614-8343-4                      ISBN 978-1-4614-8344-1 (eBook)  
DOI 10.1007/978-1-4614-8344-1  
Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2013951661

© Springer Science+Business Media New York 2014

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media ([www.springer.com](http://www.springer.com))

*To Cori, Jake, and Chloe, whose bright smiles and unconditional love inspire me every day. To my parents, without whose support I would not be where I am today.*

Joshua A. Zeichner, M.D.



# Preface

An estimated 40–50 million people in the United States suffer from acne, and up to 85 % of people experience acne at some point in their lives. Dermatologists, primary care doctors, and pediatricians see these patients every day in practice. It is important to treat the skin effectively not only to reduce the risk of physical scarring but also to address the negative psychosocial impact this disease carries. Improving the skin can improve self-confidence, interpersonal relationships, and performance in school or at work.

While the majority of acne patients seen in practice truly have run-of-the-mill acne, not all “acne” is really acne vulgaris. It may be exception rather than the rule for a patient to have a condition that mimics acne, but it is our responsibility as health care providers to be up to date and educated on acne’s broad differential diagnosis. If patients do not have any comedonal lesions, if they have an atypical medical history, or if they are not responding to traditional therapies, then alternative diagnoses should be considered. Proper diagnosis will allow us to prescribe proper treatments and ultimately improve clinical outcomes and patient satisfaction.

This book will help to provide a broad overview of acne vulgaris itself as well as conditions that manifest with acneiform eruptions in the skin.

New York, NY, USA

Joshua A. Zeichner, M.D.





# Acknowledgment

We are all influenced by the people with whom we surround ourselves. I have had the privilege of learning from the greatest minds in Dermatology, who have shaped the person I am today. While I have had countless mentors touch my career, I must take this opportunity to acknowledge one person in particular. Dr. Mark Lebwohl is truly a mentor of mentors. He has taught me not only how to be a good dermatologist, but also, more importantly, how to be a great doctor, colleague, and teacher. This book would not have been possible without his support, advice, and encouragement.



# Contents

## Part I Acne Vulgaris

<b>1 Acne Pathophysiology</b> .....	3
Shinjita Das and Rachel Reynolds	
<b>2 Clinical Presentation of Acne</b> .....	13
Guy F. Webster	
<b>3 Topical Therapies for Acne</b> .....	19
Mary-Margaret Kober, Whitney P. Bowe, and Alan R. Shalita	
<b>4 Systemic Therapies for Acne</b> .....	27
Marisa Kardos Garshick, Alexa Kimball, and Lynn Drake	
<b>5 Laser and Light Based Therapies for Acne</b> .....	35
Jeremy B. Green, Annelyse Ballin, and Joely Kaufman	

## Part II Infectious Diseases Mimicking Acne Vulgaris

<b>6 Bacterial Folliculitis</b> .....	43
Jessica Gjede and Emmy Graber	
<b>7 Gram-Negative Folliculitis</b> .....	49
Ani L. Tajirian and Leon H. Kircik	
<b>8 Hot-Tub Folliculitis</b> .....	55
Paula S. Malhotra and Joseph F. Fowler Jr.	
<b>9 Malassezia Folliculitis</b> .....	59
Patricia K. Farris and Andrea Murina	
<b>10 Tinea Barbae</b> .....	67
Lauren Kole and Boni Elewski	

<b>11 Flat Warts</b> .....	71
Ted Rosen and Sara Risner-Rumohr	
<b>12 Molluscum Contagiosum</b> .....	79
Yvonne Clark and Lawrence F. Eichenfield	
<b>13 Herpes Simplex Virus</b> .....	85
Rachel Gordon and Stephen Tyring	
<b>14 Varicella Zoster Virus</b> .....	95
Rachel Gordon, Stephen Tyring, Whitney Lapolla, and Rana Mays	
<b>Part III Variants of Acne Vulgaris</b>	
<b>15 Acne Conglobata</b> .....	107
Jonathan S. Weiss and Elijah Wilder	
<b>16 Acne Excoriée</b> .....	111
Jillian Wong Millsop and John Y.M. Koo	
<b>17 Acne Fulminans</b> .....	117
Alison Schram and Misha Rosenbach	
<b>18 Acne Mechanica</b> .....	125
Zoe Diana Draelos	
<b>19 Cushing’s Syndrome</b> .....	129
Nick Zilieris, Cheryl J. Gustafson, and Steven R. Feldman	
<b>20 PAPA Syndrome</b> .....	137
Fan Liu and Kanade Shinkai	
<b>21 Polycystic Ovary Syndrome</b> .....	149
Joslyn Kirby	
<b>22 Pomade Acne</b> .....	155
Oge Onwudiwe and Valerie D. Callender	
<b>23 Post-adolescent Female Acne</b> .....	161
Gillian Heinecke and Diane Berson	
<b>24 SAPHO Syndrome</b> .....	169
Caroline L. LaRosa and Andrea L. Zaenglein	
<b>Part IV Genetic Syndromes Mimicking Acne Vulgaris</b>	
<b>25 Apert Syndrome</b> .....	179
Yasser Albahrani and Joshua A. Zeichner	
<b>26 Birt-Hogg-Dubé Syndrome</b> .....	183
Kristina Goldenberg and Gary Goldenberg	

**27 Brooke-Spiegler Syndrome** ..... 191  
 Bradley Glodny and Joshua A. Zeichner

**28 Cowden Syndrome** ..... 195  
 Rita V. Linkner and Joshua A. Zeichner

**29 Gardner Syndrome** ..... 201  
 Alexandra Golant and Joshua A. Zeichner

**30 Gorlin Syndrome** ..... 207  
 Madelaine Haddican and James Spencer

**31 Muir-Torre Syndrome** ..... 215  
 Adam J. Luber and Joshua A. Zeichner

**32 Reed’s Syndrome** ..... 221  
 Kristen Pacific and Jason Emer

**33 Tuberos Sclerosis** ..... 229  
 Omar Pacha and Adelaide Hebert

**Part V Other Mimickers of Acne Vulgaris**

**34 Acne Scarring** ..... 237  
 Neal Bhatia, Consuelo Veronica David, Salar Hazany,  
 and Aman Samrao

**35 Eosinophilic Pustular Folliculitis** ..... 245  
 Joy Makdisi and Adam Friedman

**36 Favre-Racouchot Syndrome** ..... 253  
 Silvina Pugliese, Andrea Smith, Rachel Epstein, and Abel Torres

**37 Hidradenitis Suppurativa** ..... 259  
 Deanna M. Sikorski and Kenneth J. Tomecki

**38 Perioral Dermatitis** ..... 265  
 Bryan Gammon and Bethanee J. Schlosser

**39 Photocontact Dermatitis** ..... 273  
 Nicholas Gulati and Emma Guttman-Yassky

**40 Post-inflammatory Pigment Alteration** ..... 279  
 Rajiv I. Nijhawan and Andrew F. Alexis

**41 Pseudofolliculitis Barbae** ..... 289  
 Angela Lamb and Gregory N. Yañez

**42 Pustular Psoriasis** ..... 295  
 Sebastian Bernardo and Mark Lebwohl

**43 Rosacea**..... 309  
Joseph Bikowski

**44 Rosacea Fulminans** ..... 317  
Cristina Caridi and Joshua A. Zeichner

**45 Sarcoidosis** ..... 321  
Laura Thornsberry and Joseph English III

**46 Seborrheic Dermatitis**..... 329  
Elizabeth Farhat and Linda Stein Gold

**47 Steatocystoma Multiplex** ..... 343  
Alejandra Vivas and Jonette Keri

**48 Xanthomas** ..... 349  
Libby Rhee and Mark Kaufmann

**Part VI Pediatric Dermatoses Mimicking Acne**

**49 Periorificial Granulomatous Dermatitis** ..... 359  
Jacquelyn Levin, James Del Rosso, and Richard Miller

**50 Keratosis Pilaris Atrophicans** ..... 367  
Omar Pacha and Adelaide Hebert

**51 Neonatal and Infantile Acne** ..... 371  
Hilary Baldwin

**52 Papular Granuloma Annulare**..... 375  
Rebecca Smith

**53 Precocious Puberty and Acne** ..... 381  
Maria Miyar and Moise L. Levy

**Part VII Drug-Induced Acneiform Eruptions**

**54 Drug-Induced Acneiform Eruptions** ..... 389  
Ha K. Do, Navid Ezra, and Stephen E. Wolverson

**Index**..... 405

# Contributors

**Yasser Albahrani, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Andrew F. Alexis, M.D., M.P.H.** Department of Dermatology, St. Luke's-Roosevelt Hospital Center, New York, NY, USA

**Hilary Baldwin, M.D.** Department of Dermatology, SUNY Downstate School of Medicine, Brooklyn, NY, USA

**Annelise Ballin, M.D.** Private Practice, Dr. Brandt Dermatology Associates, Coral Gables, FL, USA

**Sebastian Bernardo, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Diane Berson, M.D.** Department of Dermatology, Weill Cornell Medical College, New York, NY, USA

**Neal Bhatia, M.D.** Division of Dermatology, Harbor-UCLA Medical Center, Torrance, CA, USA

**Joseph Bikowski, M.D.** Director, Bikowski Skin Care Center, Sewickley, PA, USA

**Whitney P. Bowe, M.D.** Department of Dermatology, SUNY Downstate Medical Center, Brooklyn, NY, USA

**Valerie D. Callender, M.D.** Callender Dermatology & Cosmetic Center, Glenn Dale, MD, USA

**Cristina Caridi, B.A.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Yvonne Clark, MPAS-C** Department of Dermatology, Sharp Rees-Stealy, La Mesa, CA, USA

**Shinjita Das, M.D.** Department of Dermatology, Harvard Combined Dermatology Residency Program, Boston, MA, USA

**Consuelo Vera David, M.D.** Division of Dermatology, Harbor-UCLA Medical Center, Torrance, CA, USA

**James Del Rosso, D.O.** Touro University College of Osteopathic Medicine, Henderson, NV, USA

**Ha K. Do, M.D.** Department of Dermatology, Indiana University School of Medicine, New York, NY, USA

**Zoe Diana Draelos, M.D.** Department of Dermatology, Duke University School of Medicine, Durham, NC, USA

**Lynn A. Drake, M.D.** Department of Dermatology, Massachusetts General Hospital, Boston, MA, USA

**Lawrence F. Eichenfield, M.D.** Division of Pediatric and Adolescent Dermatology, Rady Children's Hospital, San Diego, San Diego, CA, USA

**Boni Elewski, M.D.** Department of Dermatology, University of Alabama, Birmingham, Birmingham, AL, USA

**Jason Emer, M.D.** Department of Dermatology, Mount Sinai School of Medicine, New York, NY, USA

**Joseph C. English III, M.D.** Department of Dermatology, University of Pittsburgh, Pittsburgh, PA, USA

**Rachel Epstein, D.O.** Department of Dermatology, Loma Linda University, Loma Linda, CA, USA

**Navid Ezra, M.D.** Department of Dermatology, Indiana University School of Medicine, New York, NY, USA

**Elizabeth Farhat, M.D.** Department of Dermatology, Henry Ford Health System, West Bloomfield, MI, USA

**Patricia K. Farris, M.D.** Department of Dermatology, Old Metairie Dermatology, Metairie, LA, USA

**Steven R. Feldman, M.D., Ph.D.** Department of Dermatology, Pathology, and Public Health Sciences, Wake Forest University Baptist Medical Center, Winston-Salem, NC, USA

**Joseph F. Fowler Jr., M.D.** Division of Dermatology, University of Louisville, Louisville, KY, USA

**Adam Friedman, M.D.** Department of Dermatology, Montefiore – Albert Einstein College of Medicine, Bronx, NY, USA

**Bryan Gammon, M.D.** Department of Dermatology, Northwestern University, Chicago, IL, USA



**Marisa Kardos Garshick** Department of Dermatology, Massachusetts General Hospital, Boston, MA, USA

**Jessica Gjede, M.D.** Department of Dermatology, Boston Medical Center, Boston, MA, USA

**Bradely Glodny, M.D.** Department of Dermatology, Mt. Sinai, New York, NY, USA

**Alexandra Golant, M.D.** Department of Dermatology, The Mt. Sinai Hospital, New York, NY, USA

**Linda Stein Gold, M.D.** Department of Dermatology, Henry Ford Health System, West Bloomfield, MI, USA

**Gary Goldenberg, M.D.** Department of Dermatology, The Mount Sinai Hospital, New York, NY, USA

**Kristina Goldenberg, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Rachel Gordon, M.D.** Department of Dermatology, The University of Texas Medical School at Houston, Houston, TX, USA

**Emmy Graber, M.D.** Department of Dermatology, Boston Medical Center & Boston University School of Medicine, Boston, MA, USA

**Jeremy B. Green, M.D.** Private Practice, Dr. Brandt Dermatology Associates, Coral Gables, FL, USA

**Nicholas Gulati, B.A.** Laboratory for Investigative Dermatology, The Rockefeller University, New York, NY, USA

**Cheryl J. Gustafson, M.D.** Department of Dermatology, Wake Forest University Baptist Medical Center, Winston-Salem, NC, USA

**Emma Guttman-Yassky, M.D.** Department of Dermatology, Mount Sinai NY, New York, NY, USA

**Madelaine Haddican, M.D.** Department of Dermatology, Mount Sinai School of Medicine, New York, NY, USA

**Salar Hazany, M.D.** Division of Dermatology, Harbor-UCLA Medical Center, Torrance, CA, USA

**Adelaide A. Hebert, M.D.** Department of Dermatology, University of Texas Health Science Center, Houston, Houston, TX, USA

**Gillian Heinecke, M.D.** Department of Dermatology, Mount Sinai, New York, NY, USA

**Joely Kaufman, M.D.** Private Practice, Dr. Brandt Dermatology Associates, Coral Gables, FL, USA

**Mark D. Kaufmann, M.D.** Department of Dermatology, Icahn School of Medicine at Mt. Sinai, New York, NY, USA

**Jonette Keri, M.D., Ph.D.** Department of Dermatology and Cutaneous Surgery, Veterans Hospital, University of Miami, Miami, FL, USA

**Alexa Kimball, M.D., M.P.H.** Department of Dermatology, Massachusetts General Hospital, Boston, MA, USA

**Joslyn S. Kirby, M.D.** Department of Dermatology, Penn State Hershey, Hershey, PA, USA

**Leon H. Kircik, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

Indiana University School of Medicine, Indianapolis, IN, USA

**Mary-Margaret Kober, M.D.** Department of Dermatology, SUNY Downstate Medical Center, Brooklyn, NY, USA

**Lauren Kole, M.D.** Department of Dermatology, University of Alabama, Birmingham, Birmingham, AL, USA

**John Y.M. Koo, M.D.** Psoriasis and Skin Treatment Center, University of California San Francisco, San Francisco, CA, USA

**Angela Lamb, M.D.** Department of Dermatology, Mount Sinai Hospital, New York, NY, USA

**Whitney Lapolla, M.D.** Department of Dermatology, The University of Texas at Houston, Houston, TX, USA

**Caroline L. LaRosa, B.S.** Department of Dermatology and Pediatrics, Penn State/Milton S. Hershey Medical Center, Hershey, PA, USA

**Mark G. Lebwohl, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Jacquelyn Levin, D.O.** Department of Dermatology, Largo Medical Center, Largo, FL, USA

**Moise L. Levy, M.D.** Department of Pediatric Dermatology, Dell Children's Medical Center, Austin, TX, USA

**Rita V. Linkner, M.D.** Department of Dermatology, Mount Sinai School of Medicine, New York, NY, USA

**Fan Liu, B.A.** Department of Dermatology, University of California, San Francisco, San Francisco, CA, USA

**Adam J. Luber, B.A.** Department of Dermatology, Mount Sinai Hospital, New York, NY, USA

**Joy Makdisi, B.S.** Department of Medicine, Montefiore – Albert Einstein College of Medicine, Bronx, NY, USA

**Paula S. Malhotra, B.A., M.D.** Department of Dermatology, Northwestern University, Chicago, IL, USA

**Rana Mays, M.D.** Department of Dermatology, Baylor College of Medicine, Houston, TX, USA

**Richard Miller, D.O.** Nova Southeastern University College of Osteopathic Medicine, Tampa, FL, USA

**Jillian Wong Millsop** Department of Dermatology, Psoriasis and Skin Treatment Center, University of California San Francisco, San Francisco, CA, USA

**Maria Elena Miyar, M.D.** Department of Dermatology, UT Southwestern, Austin, TX, USA

**Andrea Murina, M.D.** Department of Dermatology, Tulane University, New Orleans, LA, USA

**Rajiv I. Nijhawan, M.D.** Department of Dermatology, St. Luke's-Roosevelt Hospital Center, New York, NY, USA

**Oge Onwudiwe, M.D.** Callender Dermatology and Cosmetic Center, Glenn Dale, MD, USA

**Omar Pacha, M.D.** Department of Dermatology, University of Texas Health Science Center, Houston, TX, USA

**Kristen Pacific, B.A.** Department of Dermatology, Mount Sinai School of Medicine, New York, NY, USA

**Silvina Pugliese, M.D.** Department of Dermatology, Loma Linda University, Loma Linda, CA, USA

**Rachel Reynolds, M.D.** Department of Dermatology, Beth Israel Deaconess Medical Center, Brookline, MA, USA

**Libby Rhee, D.O., M.S.** Department of Dermatology, St. Barnabas Hospital, Bronx, NY, USA

**Sara Risner-Rumhor, M.D.** Department of Dermatology, Baylor College of Medicine, Houston, TX, USA

**Ted Rosen, M.D.** Department of Dermatology, Baylor College of Medicine, Houston, TX, USA

**Misha Rosenbach, M.D.** Department of Dermatology, University of Pennsylvania, Philadelphia, PA, USA

**Aman Samrao, M.D.** Division of Dermatology, Harbor-UCLA Medical Center, Torrance, CA, USA

**Bethanee J. Schlosser, M.D., Ph.D.** Department of Dermatology, Northwestern University, Chicago, IL, USA

**Alison Schram, B.S.** School of Medicine, University of Pennsylvania, Philadelphia, PA, USA

**Alan R. Shalita, M.D.** Department of Dermatology, SUNY Downstate Medical Center, Brooklyn, NY, USA

**Kanade Shinkai, M.D., Ph.D.** Department of Dermatology, University of California, San Francisco, San Francisco, CA, USA

**Deanna M. Sikorski, M.D.** Department of Dermatology, The Cleveland Clinic Foundation, Cleveland, OH, USA

**Andrea Smith, M.D.** Department of Dermatology, Loma Linda University, Loma Linda, CA, USA

**Rebecca L. Smith, M.D.** Fort Mill Dermatology, LLC, Fort Mill, SC, USA

**James Spencer, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Ani L. Tajirian, M.D.** Fletcher Allen Health Care, University of Vermont College of Medicine, Burlington, VT, USA

Webster Management Inc., Oakland, CA, USA

**Laura Thornsberry, M.D.** Department of Internal Medicine, University of Pittsburgh, UPMC Montefiore Hospital, Pittsburgh, PA, USA

**Kenneth J. Tomecki, M.D.** Department of Dermatology, The Cleveland Clinic Foundation, Cleveland, OH, USA

**Abel Torres, M.D.** Department of Dermatology, Loma Linda University, Loma Linda, CA, USA

**Stephen Tyring, M.D., Ph.D., M.B.A.** Department of Dermatology, The University of Texas at Houston, Houston, TX, USA

**Alejandra Vivas, M.D.** Department of Dermatology, University of Miami, Miami, FL, USA

**Guy F. Webster, M.D., Ph.D.** Department of Dermatology, Jefferson Medical College, Hockessin, DE, USA

**Jonathan S. Weiss, M.D.** Department of Dermatology, Emory University, Atlanta, GA, USA

**Elijah B. Wilder, D.O.** Philadelphia College of Osteopathic Medicine, Georgia, Atlanta, GA, USA

**Stephen E. Wolverton, M.D.** Department of Dermatology, Indiana University School of Medicine, New York, NY, USA

**Gregory N. Yañez, B.A.** Icahn School of Medicine at Mount Sinai Class of 2015, New York, NY, USA

**Andrea L. Zaenglein, M.D.** Department of Dermatology and Pediatrics, Penn State/Milton S. Hershey Medical Center, Hershey, PA, USA

**Joshua A. Zeichner, M.D.** Department of Dermatology, Mt. Sinai School of Medicine, New York, NY, USA

**Nick Zilberis, D.O., B.sc., M.D.** Department of Internal Medicine, Baptist Hospital, Miami Beach, FL, USA