

very much “U.S.-centric” and as such will be much more useful to students in the United States than to those in Europe and other parts of the world. From reading it, one might imagine that there is not much in the field of pharmacoepidemiology outside the United States — a common misconception. For instance, there is no mention of the United Kingdom’s Yellow Card Scheme for reporting suspected adverse drug reactions or the original regionalized French systems for spontaneous reporting. There is no mention of European regulatory systems at a time when European Risk Management Strategy plans are being implemented and European authorities have the power to enforce post-authorization studies, whereas the U.S. Food and Drug Administration is still toothless. In addition, the European editions of the International Conferences on Pharmacoepidemiology have more abstracts and participants than their North American counterparts. Despite this limitation (and I admit to having a conflict of interest in this matter), this book is a solid foundation for those who wish to start in pharmacoepidemiology.

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### THE ESTROGEN ELIXIR: A HISTORY OF HORMONE REPLACEMENT THERAPY IN AMERICA

By Elizabeth Siegel Watkins. 351 pp. Baltimore, Johns Hopkins University Press, 2007. \$45. ISBN 978-0-8018-8602-7.

MUCH HAS BEEN WRITTEN ABOUT POST-menopausal estrogen therapy. No other prescription medication has had such successful promotion to patients and physicians, such widely debated opinions about its use, or such striking ups and downs in the number of prescriptions filled. The use of noncontraceptive estrogen was originally advocated for the treatment of troublesome symptoms of menopause. No one argues against this indication, but the short-term use for menopausal symptoms does not explain why one estrogen product became the best-selling prescription medication in the United States. This wonderful book tells the story.

In *The Estrogen Elixir*, Elizabeth Siegel Watkins

describes the complex factors that led to the first and second rise and fall of estrogen therapy during the past 50 years. This well-researched and well-referenced book is written by a historian who covers the story of estrogen from discovery to application, the sociology of the baby boomers who are fighting aging every step of the way, and the efficacy of the aggressive and often hidden marketing of estrogen directly to prescribers and women. Many sources, some not widely available, give texture to this history — including *Scoreboard*, an in-house publication meant to motivate one company’s sales force, and tearful testimony to the Food and Drug Administration (FDA) from postmenopausal women about their dependence on estrogen.

The author discusses how the annual number of estrogen prescriptions in the United States nearly doubled between 1960 and 1975 after the popular press and a best-selling book claimed that “estrogen deficiency” caused many diseases related to aging and that “estrogen replacement” prevented these diseases, made women feel younger and happier, and also made them easier to live with. Excerpts from educational pamphlets about menopause and estrogen that were subsidized by the pharmaceutical industry and placed in doctors’ waiting rooms, from articles in women’s magazines, and from the best-selling book — none of them with an obvious industry acknowledgment — make for compelling reading.

The first fall in estrogen prescriptions followed the publication of two widely publicized 1975 clinical studies that reported that estrogen treatment significantly increased the risk of endometrial cancer. Prescriptions plummeted but rose again within a decade. Watkins attributes this revival to new studies that showed that the addition of a progestin to the treatment prevented precancerous pathologic features, but she also highlights the increasing promotion of estrogen as preventive medicine by researchers, clinicians, and the pharmaceutical industry. In 1992, Premarin became the most frequently prescribed drug in the United States and remained in first or second place for the rest of the century.

Despite this enthusiasm for the drug, only a single long-term clinical trial supported the use of estrogen for the prevention of chronic disease. The remarkable story of this trial, which was con-

ducted by a single clinician without industry support, is worth the price of this book. Unfortunately, the trial was too small for definitive results, and the window of opportunity for a very large clinical trial was closing. The two Women's Health Initiative (WHI) clinical trials were initiated in 1992, just in the nick of time.

The second fall in estrogen prescriptions followed the release in 2002 of unexpected results from the first WHI trial showing that Premarin in combination with a progestin was not significantly better than placebo for survival or for the overall prevention of chronic disease in postmenopausal women. The trial also provided evidence that Premarin was associated with an increased risk of breast cancer. Premarin prescriptions fell abruptly by 50%.

Watkins's book ends with the immediate effect of the results of the WHI trial. She does not discuss the ensuing controversy about estrogen therapy, but she suggests several reasons why the results of the WHI study are unlikely to close the chapter on the long-term use of postmenopausal estrogen — despite the current FDA indication for short-term use only. Throughout the book, Watkins acknowledges that a woman's decision about whether to take estrogen is not always based on expected health benefits or objections to the medicalization of menopause. Estrogen is about hope. Industry hype associating hormone-replacement therapy with youth and beauty began early and continues today. In this regard, an unretouched photograph of a stooped, wrinkled, old woman side by side with a "Botoxed" celebrity is worth a thousand words.

This is not a book for or against estrogen therapy. No clinical recommendations are made. It is for anyone who is interested in the forces that shape the choices women make about hormone-replacement therapy. It is not the last chapter on the history of postmenopausal estrogen therapy. If this book sells well — and I hope it will — it will be interesting to anticipate what a new chapter, written after the first post-WHI decade, will reveal and when, if ever, there will be a final chapter in this story.

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## THE SCIENCE OF ADDICTION: FROM NEUROBIOLOGY TO TREATMENT

By Carlton K. Erickson. 290 pp., illustrated. New York, W.W. Norton, 2007. \$32. ISBN 978-0-393-70463-1.

RECENT ADVANCES IN ADDICTION MEDICINE have been driven by advances in neurobiology. In *The Science of Addiction*, Carlton Erickson attempts to enlighten the caregivers of patients with substance abuse problems and the patients themselves about advancements in the science of addiction so that clinicians will, as Erickson explains in the book's preface, "empathize with their patients and apply such science to principles of treatment." This is an ambitious goal and a broad audience.

The book is organized in a traditional and well-considered manner. Basic terminology, neuroanatomy, neurobiology, and the genetics of addiction are reviewed; the effects of drugs are described; and the quality of current research is discussed, followed by an overview of evidence-based research for the future. The four background chapters give readers the basic tools for understanding addiction and its neurobiology. In chapter 1, Erickson admits, "I don't like the word 'addiction,'" and goes on to examine the term from various vantage points. He then introduces more conventional terms related to addiction, such as "abuse" and "dependence." This approach effectually highlights controversial aspects of addiction for readers who are unfamiliar with these concepts.

The next three chapters cover the brain science, anatomy, neurobiology, and genetics of dependence. The chapter on basic science appears to have been written for patients, although many professionals could benefit from the overview. The more complex chapter concerning anatomy and neurobiology goes into detail about the reward pathway. The discussion of how preoccupation with a substance can lead to addiction is particularly interesting. Case studies illustrate these concepts in a way that is accessible to readers. The chapter on genetics provides a detailed discussion of basic principles that, like some earlier material, seems appropriate for readers who are not medical professionals. The review of the evidence for the role of genetics in addiction is somewhat cursory in both scope and depth.

The middle section of the book contains three