

Stahl's Essential Psychopharmacology

Prescriber's Guide

Eighth Edition

With the range of psychotropic drugs expanding and the usages of existing medications diversifying, we are pleased to present the Eighth Edition of the world's best-selling formulary in psychopharmacology. The new edition features seven brand new compounds as well as information about several newly approved formulations of existing drugs. Many important new indications are covered for existing drugs, as are updates to the profiles of the entire content and collection, including new injectable and transdermal formulations, as well as updated warnings and indications. The icons and Pearls have been refreshed throughout, and with its easy-to-use, full-colour template-driven navigation system, Prescriber's Guide combines evidence-based data with clinically informed advice to support everyone who is prescribing in the field of mental health.

Stephen M. Stahl is Adjunct Professor of Psychiatry at the University of California, San Diego, Clinical Professor of Psychiatry and Neuroscience at the University of California, Riverside, and Honorary Visiting Senior Fellow in Psychiatry at the University of Cambridge.



Stahl's Essential Psychopharmacology

Prescriber's Guide Eighth Edition

Stephen M. Stahl

University of California, San Diego and Riverside

Editorial Assistant Meghan M. Grady

With illustrations by Nancy Muntner







Shaftesbury Road, Cambridge CB2 8EA, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314-321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi - 110025, India

103 Penang Road, #05-06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781009464758

DOI: 10.1017/9781009464772

Editions 1 to 7 © Stephen M. Stahl 2005, 2006, 2009, 2011, 2014, 2017, 2021, 2024

8th edition © Cambridge University Press & Assessment 2024

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press & Assessment.

First published 2005 Second edition published 2006 Third edition published 2009 Fourth edition published 2011 Fifth edition published 2014 Sixth edition published 2017 Seventh edition published 2021 Eighth edition published 2024

Printed in Mexico by Litográfica Ingramex, S.A. de C.V.

A catalogue record for this publication is available from the British Library

A Cataloging-in-Publication data record for this book is available from the Library of Congress.

ISBN 978-1-009-46475-8 Paperback ISBN 978-1-009-46473-4 Spiral

Cambridge University Press & Assessment has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

Every effort has been made in preparing this book to provide accurate and up-to-date information that is in accord with accepted standards and practice at the time of publication. Although case histories are drawn from actual cases, every effort has been made to disguise the identities of the individuals involved. Nevertheless, the authors, editors, and publishers can make no warranties that the information contained herein is totally free from error, not least because clinical standards are constantly changing through research and regulation. The authors, editors, and publishers therefore disclaim all liability for direct or consequential damages resulting from the use of material contained in this book. Readers are strongly advised to pay careful attention to information provided by the manufacturer of any drugs or equipment that they plan to use.



Contents

	Introduction	xi
	List of icons	XV
1.	acamprosate	1
2.	agomelatine	5
3.	alprazolam	11
4.	amisulpride	17
5.	amitriptyline	25
6.	amoxapine	33
7.	amphetamine (d)	39
8.	amphetamine (d,l)	47
9.	aripiprazole	55
10.	armodafinil	67
11.	asenapine	73
12.	atomoxetine	81
13.	benztropine	87
14.	blonanserin	91
15.	bremelanotide	97
16.	brexanolone	101
17.	brexpiprazole	105
18.	buprenorphine	113
19.	bupropion	119
20.	buspirone	125
21.	caprylidene	129
22.	carbamazepine	133
23.	cariprazine	139
24.	chlordiazepoxide	147
25.	chlorpromazine	153
26.	citalopram	159
27.	clomipramine	165
28.	clonazepam	173
29.	clonidine	179
30.	clorazepate	185
31.	clozapine	191
32.	cyamemazine	201
33.	daridorexant	207



34.	desipramine	211
35.	desvenlafaxine	219
36.	deutetrabenazine	225
37.	dexmedetomidine	229
38.	dextromethorphan-bupropion	233
39.	dextromethorphan-quinidine	239
40.	diazepam	243
41.	diphenhydramine	249
42.	disulfiram	253
43.	donepezil	257
44.	dothiepin	263
45.	doxepin	269
46.	duloxetine	277
47.	escitalopram	283
48.	esketamine	289
49.	estazolam	295
50.	eszopiclone	299
51.	flibanserin	303
52.	flumazenil	307
53.	flunitrazepam	311
54.	fluoxetine	315
55.	flupenthixol	321
56.	fluphenazine	327
57.	flurazepam	335
58.	fluvoxamine	339
59.	gabapentin	345
60.	galantamine	351
61.	guanfacine	357
62.	haloperidol	361
63.	hydroxyzine	369
64.	iloperidone	373
65.	imipramine	381
66.	isocarboxazid	389
67.	ketamine	397
68.	lamotrigine	401
69.	lemborexant	409
70.	levetiracetam	413
71.	levomilnacipran	417
72.	lisdexamfetamine	423



73.	lithium	429
74.	lofepramine	435
75.	lofexidine	441
76.	loflazepate	445
77.	lorazepam	451
78.	loxapine	457
79.	lumateperone	465
80.	lurasidone	473
81.	maprotiline	481
82.	memantine	489
83.	methylfolate (l)	493
84.	methylphenidate (d)	497
85.	methylphenidate (d,l)	503
86.	mianserin	511
87.	midazolam	515
88.	milnacipran	519
89.	mirtazapine	525
90.	moclobemide	531
91.	modafinil	537
92.	molindone	543
93.	nalmefene	549
94.	naltrexone	553
95.	naltrexone-bupropion	557
96.	nefazodone	563
97.	nortriptyline	569
98.	olanzapine	577
99.	olanzapine-samidorphan	587
100.	oxazepam	595
101.	oxcarbazepine	601
102.	paliperidone	607
103.	paroxetine	619
104.	perospirone	627
105.	perphenazine	633
106.	phenelzine	639
107.	phentermine-topiramate	645
108.	pimavanserin	651
109.	pimozide	655
110.	pipothiazine	661
111.	pitolisant	667



112.	prazosin	671
113.	pregabalin	675
114.	propranolol	681
115.	protriptyline	685
116.	quazepam	691
117.	quetiapine	695
118.	ramelteon	703
119.	reboxetine	707
120.	risperidone	713
121.	rivastigmine	725
122.	selegiline	731
123.	serdexmethylphenidate	741
124.	sertindole	747
125.	sertraline	753
126.	sildenafil	761
127.	sodium oxybate	765
128.	solriamfetol	769
129.	sulpiride	773
130.	suvorexant	779
131.	tasimelteon	783
132.	temazepam	787
133.	thioridazine	791
134.	thiothixene	797
135.	tiagabine	803
136.	tianeptine	809
137.	topiramate	813
138.	tranylcypromine	819
139.	trazodone	825
140.	triazolam	831
141.	trifluoperazine	835
142.	trihexyphenidyl	841
143.	triiodothyronine	845
144.	trimipramine	849
145.	valbenazine	857
146.	valproate	861
147.	varenicline	869
148.	venlafaxine	873
149.	vilazodone	879
150.	viloxazine	885

viii



151.	vortioxetine	891
152.	xanomeline-trospium	897
153.	zaleplon	903
154.	ziprasidone	907
155.	zolpidem	915
156.	zonisamide	919
157.	zopiclone	923
158.	zotepine	927
159.	zuclopenthixol	933
	Index by Drug Name	939
	Index by Drug Use	945
	Index by Drug Class	953
	Abbreviations	959



Introduction

This Guide is intended to complement Stahl's Essential Psychopharmacology. Stahl's Essential Psychopharmacology emphasizes mechanisms of action and how psychotropic drugs work upon receptors and enzymes in the brain. This Guide gives practical information on how to use these drugs in clinical practice.

It would be impossible to include all available information about any drug in a single work, and no attempt is made here to be comprehensive. The purpose of this *Guide* is instead to integrate the art of clinical practice with the science of psychopharmacology. That means including only essential facts in order to keep things short. Unfortunately it also means excluding less critical facts as well as extraneous information, which may nevertheless be useful to the reader but would make the book too long and dilute the most important information. In deciding what to include and what to omit, the author has drawn upon common sense and 30 years of clinical experience with patients. He has also consulted with many experienced clinicians and analyzed the evidence from controlled clinical trials and regulatory filings with government agencies.

In order to meet the needs of the clinician and to facilitate future updates of this *Guide*, the opinions of readers are sincerely solicited. Feedback can be emailed to customerservice@neiglobal.com. Specifically, are the best and most essential psychotropic drugs included here? Do you find any factual errors? Are there agreements or disagreements with any of the opinions expressed here? Are there suggestions for any additional tips or pearls for future editions? Any and all suggestions and comments are welcomed.

All of the selected drugs are presented in the same format in order to facilitate rapid access to information. Specifically, each drug is broken down into five sections, each designated by a unique color background: Therapeutics, Side Effects, Dosing and Use, Special Populations, and The Art of Psychopharmacology, followed by key references.

Therapeutics covers the brand names in major countries; the class of drug; what it is commonly prescribed and approved for by the United States Food and Drug Administration (FDA); how the drug works; how long it takes to work; what to do if it works or if it doesn't work; the best augmenting combinations for partial response or treatment resistance; and the tests (if any) that are required.

Side Effects explains how the drug causes side effects; gives a list of notable, life-threatening, or dangerous side effects; gives a specific rating for weight gain or sedation; and gives advice about how to handle side effects, including best augmenting agents for side effects.

Dosing and Use gives the usual dosing range; dosage forms; how to dose and dosing tips; symptoms of overdose; long-term use; if habit forming, how to stop; pharmacokinetics; drug interactions; when not to use; and other warnings or precautions.

Special Populations gives specific information about any possible renal, hepatic, and cardiac impairments, and any precautions to be taken for treating the elderly, children, adolescents, and pregnant and breast-feeding women.

The Art of Psychopharmacology gives the author's opinions on issues such as the potential advantages and disadvantages of any one drug, the primary target symptoms, and clinical pearls to get the best out of a drug.

χi



In addition, drugs for which switching between medications can be complicated have a special section called The Art of Switching, which includes clinical pearls and graphical representations to help guide the switching process.

There is a list of icons used in this *Guide* following this Introduction and at the back of the *Guide* are several indices. The first is an index by drug name, giving both generic names (uncapitalized) and trade names (capitalized and followed by the generic name in parentheses). The second is an index of common uses for the generic drugs included in the *Guide* and is organized by disorder/symptom. Agents that are approved by the FDA for a particular use are shown in bold. The third index is organized by drug class and lists all the agents that fall within each particular class. In addition to these indices there is a list of abbreviations.

Readers are encouraged to consult standard references¹ and comprehensive psychiatry and pharmacology textbooks for more in-depth information. They are also reminded that the Art of Psychopharmacology section is the author's opinion.

It is strongly advised that readers familiarize themselves with the standard use of these drugs before attempting any of the more exotic uses discussed, such as unusual drug combinations and doses. Reading about both drugs before augmenting one with the other is also strongly recommended. Today's psychopharmacologist should also regularly track blood pressure, weight, and body mass index for most of his or her patients. The dutiful clinician will also check out the drug interactions of noncentral nervous system (CNS) drugs with those that act in the CNS, including any prescribed by other clinicians.

Certain drugs may be for experts only, and these might include clozapine, thioridazine, pimozide, nefazodone, and monoamine oxidase (MAO) inhibitors, among others. Off-label uses not approved by the FDA and inadequately studied doses or combinations of drugs may also be for the expert only, who can weigh risks and benefits in the presence of sometimes vague and conflicting evidence. Pregnant or nursing women, or people with two or more psychiatric illnesses, substance abuse, and/or a concomitant medical illness may be suitable patients for the expert only. Controlled substances also require expertise. Use your best judgment as to your level of expertise and realize that we are all learning in this rapidly advancing field. The practice of medicine is often not so much a science as it is an art. It is important to stay within the standards of medical care for the field, and also within your personal comfort zone, while trying to help extremely ill and often difficult patients with medicines that can relieve their suffering and sometimes transform their lives.

Finally, this book is intended to be genuinely helpful for practitioners of psychopharmacology by providing them with the mixture of facts and opinions selected by the author. Ultimately, prescribing choices are the reader's responsibility. Every effort has been made in preparing this book to provide accurate and up-to-date information in accord with accepted standards and practice at the time of publication. Nevertheless, the psychopharmacology field is evolving rapidly and the author and publisher make no warranties that the information contained herein is totally free from error, not least because clinical standards are constantly changing through research and regulation. Furthermore, the author and publisher disclaim

 $^{^{1}}$ For example, Physician's Desk Reference and Martindale: The Complete Drug Reference.



any responsibility for the continued currency of this information and disclaim all liability for any and all damages, including direct or consequential damages, resulting from the use of information contained in this book. Doctors recommending and patients using these drugs are strongly advised to pay careful attention to, and consult information provided by, the manufacturer.



List of icons



How the drug works, mechanism of action

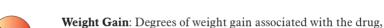


Best augmenting agents to add for partial response or treatment resistance



Life-threatening or dangerous side effects







with unusual signifying that weight gain has been reported but is not expected; not unusual signifying that weight gain occurs in a significant minority; common signifying that many experience weight gain and/or it can be significant in amount; and problematic signifying that weight gain occurs frequently, can be significant in amount, and may be a health problem in some patients











Sedation: Degrees of sedation associated with the drug, with unusual signifying that sedation has been reported but is not expected; not unusual signifying that sedation occurs in a significant minority; common signifying that many experience sedation and/or it can be significant in amount; and problematic signifying that sedation occurs frequently, can be significant in amount, and may be a health problem in some patients



Tips for dosing based on the clinical expertise of the author



Drug interactions that may occur



Warnings and precautions regarding use of the drug



Dosing and other information specific to children and adolescents



Information regarding use of the drug during pregnancy





Clinical pearls of information based on the clinical expertise of the author



The art of switching



Suggested reading