

Child Medication Fact Book *for* Psychiatric Practice

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“Practical, thorough, and easy to use—a must for all prescribers!”

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Child Medication Fact Book *for* Psychiatric Practice

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Table of Contents

Introduction..... 5

General Tips on Child and Adolescent Psychopharmacology 7

Note: Some medications, eg guanfacine, are covered in more than one chapter; however, the fact sheets are listed only in one of those chapters.

ADHD Medications..... 11

Amphetamine (Adzenys XR-ODT, Dyanavel XR, Evekeo) Fact Sheet 16

Atomoxetine (Strattera) Fact Sheet [G] 17

Clonidine (Catapres, Kapvay) Fact Sheet [G] 18

Dexmethylphenidate (Focalin) Fact Sheet [G] 19

Dextroamphetamine (Dexedrine) Fact Sheet [G] 20

Guanfacine (Intuniv, Tenex) Fact Sheet [G] 21

Lisdexamfetamine (Vyvanse) Fact Sheet 22

Methamphetamine (Desoxyn) Fact Sheet [G] 23

Methylphenidate IR (Ritalin) Fact Sheet [G] 24

Methylphenidate ER (Concerta, Ritalin-SR and LA) Fact Sheet [G] 25

Methylphenidate Transdermal (Daytrana) Fact Sheet 26

Mixed Amphetamine Salts (Adderall) Fact Sheet [G] 27

Antidepressants 29

Bupropion (Wellbutrin) Fact Sheet [G] 32

Citalopram (Celexa) Fact Sheet [G] 33

Desvenlafaxine (Pristiq) Fact Sheet [G] 34

Duloxetine (Cymbalta) Fact Sheet [G] 35

Escitalopram (Lexapro) Fact Sheet [G] 36

Fluoxetine (Prozac) Fact Sheet [G] 37

Fluvoxamine (Luvox) Fact Sheet [G] 38

Mirtazapine (Remeron) Fact Sheet [G] 39

Paroxetine (Paxil, Pexeva) Fact Sheet [G] 40

Selegiline Transdermal (EMSAM) Fact Sheet 41

Sertraline (Zoloft) Fact Sheet [G] 42

Trazodone Fact Sheet [G] 43

Tricyclic Antidepressants (TCAs) Fact Sheet [G] 44

Venlafaxine (Effexor XR) Fact Sheet [G] 45

Antipsychotics..... 47

Aripiprazole (Abilify) Fact Sheet [G] 51

Asenapine (Saphris) Fact Sheet 52

Chlorpromazine (Thorazine) Fact Sheet [G] 53

Clozapine (Clozaril) Fact Sheet [G] 54

Haloperidol (Haldol) Fact Sheet [G] 55

Lurasidone (Latuda) Fact Sheet 56

Olanzapine (Zyprexa) Fact Sheet [G].....	57
Paliperidone (Invega) Fact Sheet [G].....	58
Perphenazine (Trilafon) Fact Sheet [G].....	59
Quetiapine (Seroquel) Fact Sheet [G].....	60
Risperidone (Risperdal) Fact Sheet [G].....	61
Ziprasidone (Geodon) Fact Sheet [G].....	62
Long-Acting Injectable (LAI) Antipsychotics.....	63

Anxiolytics and Hypnotics..... 67

Antihistamines (Diphenhydramine, Doxylamine, Hydroxyzine) Fact Sheet [G].....	72
Bupirone (BuSpar) Fact Sheet [G].....	73
Clonazepam (Klonopin) Fact Sheet [G].....	74
Lorazepam (Ativan) Fact Sheet [G].....	75
Prazosin (Minipress) Fact Sheet [G].....	76
Propranolol (Inderal) Fact Sheet [G].....	77

Complementary Treatments..... 79

L-Methylfolate (Deplin) Fact Sheet.....	82
Magnesium Fact Sheet.....	83
Melatonin Fact Sheet.....	84
N-Acetylcysteine (NAC) Fact Sheet.....	85
Omega-3 Fatty Acids (Fish Oil) Fact Sheet.....	86
S-Adenosyl-L-Methionine (SAME) Fact Sheet.....	87
St. John’s Wort Fact Sheet.....	88
Vitamin D Fact Sheet.....	89

Mood Stabilizers..... 91

Carbamazepine (Tegretol) Fact Sheet [G].....	93
Lamotrigine (Lamictal) Fact Sheet [G].....	94
Lithium (Lithobid) Fact Sheet [G].....	95
Oxcarbazepine (Trileptal) Fact Sheet [G].....	96
Valproic Acid (Depakote) Fact Sheet [G].....	97

Substance Use Medications..... 99

Acamprosate (Campral) Fact Sheet [G].....	102
Buprenorphine (Buprenex, Probuphine, Sublocade) Fact Sheet [G].....	103
Buprenorphine/Naloxone (Suboxone) Fact Sheet [G].....	104
Disulfiram (Antabuse) Fact Sheet [G].....	105
Methadone (Methadose) Fact Sheet [G].....	106
Naloxone (Evzio, Narcan Nasal Spray) Fact Sheet [G].....	107
Naltrexone (ReVia, Vivitrol) Fact Sheet [G].....	108
Nicotine Gum/Lozenge (Nicorette) Fact Sheet [G].....	109
Nicotine Inhaled (Nicotrol Inhaler) Fact Sheet.....	110
Nicotine Nasal Spray (Nicotrol NS) Fact Sheet.....	111
Nicotine Patch (Nicoderm CQ) Fact Sheet [G].....	112
Varenicline (Chantix) Fact Sheet.....	113

Appendices	115
Appendix A: Blood Pressure Parameters for Children	115
Appendix B: Growth and Body Mass Index Charts	119
Appendix C: Abnormal Involuntary Movement Scale (AIMS)	123
Appendix D: Guidelines for Informed Consent	126
Appendix E: Drug Interactions in Psychiatry	127
Appendix F: Schedules of Controlled Substances	134
Appendix G: Lab Monitoring for Psychiatric Medications	135
Appendix H: Pharmacogenetic Testing Recommendations	136
Appendix I: Medications in Pregnancy and Lactation Risk Information	138

List of Tables

Table 1: ADHD Medications	13
Table 2: Antidepressants	30
Table 3: First-Generation Antipsychotics	49
Table 4: Second-Generation Antipsychotics	49
Table 5: Long-Acting Injectable Antipsychotics	64
Table 6: Anxiolytics and Hypnotics	69
Table 6.1: Benzodiazepine Dosage Equivalencies	71
Table 7: Complementary Treatments	81
Table 8: Mood Stabilizers	92
Table 9: Substance Use and Dependence Medications	100

Index	143
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Introduction

HOW TO USE THIS BOOK

Medication information is presented in three ways in this book.

Chapter introductions: These are guides to general therapeutic categories of child psychopharmacology. There is natural overlap between these areas; however, we hope that our groupings are convenient for quick reference in everyday office practice.

Medication fact sheets: In-depth prescribing information for select medications (not all psychiatric medications are covered). There are 70 medication fact sheets in this book. Medications that fall into more than one category are included in each applicable chapter table, but each medication has only one fact sheet (placed in the chapter where we believe the medication is most commonly used). We have included most of the commonly prescribed and newer medications for which there are data and experience in children. These fact sheets include dosing, indications and common uses (both on and off label), side effects, mechanisms of action, recommendations for clinical monitoring, evidence, clinical pearls, and fun facts.

Quick-scan medication tables: These are located after the chapter introduction for each therapeutic category and list the very basics: generic and brand names, FDA-approved indications, strengths available, starting doses, and target doses. These tables contain most of the commonly prescribed psychiatric medications in pediatric practice.

CATEGORIES OF MEDICATIONS

We did our best to categorize medications rationally. However, in some cases a medication can fall into more than one category. In such cases, we placed the medication's fact sheet in the therapeutic category for which it is most often used. If you're having trouble finding a medication in a particular section, look in the index to find its page number.

MORE ON THE MEDICATION FACT SHEETS

The goal of these fact sheets is to provide need-to-know information that can be easily and quickly absorbed during a busy day of seeing patients. An important goal, therefore, is that all the information should fit on a single page. Please refer to the *PDR (Physicians' Desk Reference)* when you need more in-depth information.

- For the most part, each fact sheet contains the following information:
- Both the brand and generic names.
- Generic availability, denoted with a [G] or (G).
- FDA-approved indications in kids and in adults.
- Off-label uses. We list the more common off-label uses, based on both the medical literature and our own clinical experience. Just because we list a potential use does not imply that we endorse a medication as being particularly effective for that use. We are simply alerting you to the fact that there is some evidence for efficacy or at least reports of use.
- Dosage forms, along with available strengths.
- Dosage guidance. We provide recommendations on how to dose medications; these are derived from a variety of sources, including package inserts, clinical trials, and common clinical practice. In other words, don't be surprised when our dosing instructions are at odds with what you find in the *PDR* or other sources such as RxList.
- Lab monitoring recommendations. We include the usual routine monitoring measures for each medication. Of course, you may need to think beyond the "routine" if the clinical picture warrants it.
- Cost information. Pricing information for a 1-month supply of a common dosing regimen was obtained from the website GoodRx (www.goodrx.com), accessed in May 2018. These are the prices patients would have to pay if they had no insurance. Because of wide variations in price depending on the pharmacy, in this edition of the *Child Medication Fact Book* we list price categories rather than the price in dollars. The categories are:
 - \$: Inexpensive: <\$50/month
 - \$\$: Moderate: \$50–\$100/month
 - \$\$\$: Expensive: \$100–\$200/month
 - \$\$\$\$: Very expensive: \$200–\$500/month
 - \$\$\$\$: Extremely expensive: >\$500/month

Many patients have some type of insurance and are therefore not going to pay retail price, but rather a co-pay, which is usually less expensive. However, off-label uses of medications in child psychiatry are often not covered by insurance. Also, even when covered, the co-pays for medication can be high, particularly for high-deductible insurance plans. With no clear source for accurately predicting a co-pay, you can use the retail price as a clue. Meds that are very inexpensive may

require no co-pay, while the most expensive drugs will either require a very expensive co-pay, or, more likely, will not be covered at all without an onerous pre-authorization process.

- Side effects information. We break down side effects into “most common” vs “rare but serious” side effects. We generally define “most common” side effects as those occurring in at least 5% of patients in clinical trials, and which were at least double the rate of the placebo group. Such information is usually found in tables in the drugs’ package inserts. We also used post-marketing clinical experience as a guide in determining which side effects were common enough to make the list.
- Mechanism of action. While the mechanism of action is not well-established for most psychiatric drugs, we thought it would be important to report the mechanisms most commonly cited.
- Pharmacokinetics, with a focus on drug metabolism and/or half-life.
- Drug interactions.
- Evidence and clinical pearls, which typically comment on the evidence base for use in children and the advantages or disadvantages of a medication in comparison to others in its therapeutic category, tips for dosing or avoiding side effects, types of patients who seem to benefit the most, reports about off-label use, and so forth.
- Fun facts.
- Lastly, our bottom-line summary or assessment for that particular medication.

APPENDICES

Please note that in these appendices we include a number of medications that are not generally used in children but are listed for completeness.

- Blood pressure parameters for children. A guide for clinicians, in particular for children on stimulant medication.
- Growth and body mass index charts. These are also helpful in our work as we track the growth and development of our patients.
- Abnormal Involuntary Movement Scale (AIMS). While we wish to avoid unneeded use of antipsychotic medications and others that might cause tardive dyskinesia, the AIMS helps us to monitor for such side effects.
- Informed consent guidelines. This topic can be particularly complicated in child and adolescent psychiatry, so here we offer guidelines for clinicians to navigate this process.
- Drug interactions in psychiatry. While we do provide some information on drug interactions in the fact sheets, this appendix features a more extensive discussion of the topic, as well as a table of interactions for commonly prescribed drugs.
- Schedules of controlled substances. Just in case you can’t remember which drugs are in which DEA schedule or what each schedule means, we have you covered with a handy table.
- Lab monitoring for psychiatric medications. We’ve included a short quick-reference table listing the medications that require laboratory monitoring, along with the labs you should consider ordering.
- Pharmacogenetic testing recommendations. Although we do not feel that pharmacogenetic testing has reached a stage of routine clinical utility, we’ve added a brief section providing some basic information.
- Pregnancy and lactation risk information. The risks and benefits of using psychiatric medications in pregnancy and breastfeeding are not as simple or clear as the previously used “ABCDX” categories might suggest. The new Pregnancy and Lactation Labeling Rule (PLLR) has been implemented by the FDA, resulting in a more detailed narrative describing available risk data instead of the letter category designation. Rather than putting this information in the fact sheets, we have a separate section in the appendices devoted to the topic.

FINANCIAL DISCLOSURES

Drs. Feder, Tien, and Puzantian have disclosed that they have no relevant relationships or financial interests in any commercial company pertaining to the information provided in this book.

DISCLAIMER

The medication information in this book was formulated with a reasonable standard of care and in conformity with professional standards in the field of child and adolescent psychiatry. Medication prescribing decisions are complex, and you should use these fact sheets as only one of many possible sources of medication information. This information is not a substitute for informed medical care. This book is intended for use by licensed professionals only.

If you have any comments or corrections, please let us know by writing to us at info@thecarlatreport.com or Carlat Publishing, P. O. Box 626, Newburyport, MA 01950.

TABLE 3: First-Generation Antipsychotics

Generic Name (Brand Name) Year FDA Approved [G] denotes generic availability	Relevant FDA Indication(s) (Pediatric indications in bold)	Available Strengths (mg)	Dosage Equivalents	Usual Pediatric Dosage Range (starting-max) (mg)	EPS and Akathisia	Anticholinergic	Relative Sedation and Orthostasis	Notes
Chlorpromazine [G] (Thorazine ¹) 1957	Psychosis, mania, nausea/vomiting; severe behavioral problems (0.5–17); excessive motor activity	10, 25, 50, 100, 200; IM: 25 mg/mL	100	10–200	Low	Moderate	High	Injectable available; photosensitivity
Haloperidol [G] (Haldol, Haldol Decanoate) 1967	Psychosis (3–17), Tourette's disorder (3–17), severe behavioral problems (3–17); excessive motor activity	0.5, 1, 2, 5, 10, 20	2	0.25–10	Very high	Low	Low	Oral solution; injectables (short and LA) available
Perphenazine [G] (Trilafon ¹) 1957	Schizophrenia (12 and older); severe nausea/vomiting	2, 4, 8, 16	8	8–64	High	Low	Low	Insufficient evidence in kids; mid-potency agent with lower EPS potential than haloperidol

¹Brand discontinued; no longer available as brand

TABLE 4: Second-Generation Antipsychotics

Generic Name (Brand Name) Year FDA Approved [G] denotes generic availability	Relevant FDA Indication(s) (Pediatric indications in bold)	Available Strengths (mg)	Usual Pediatric Dosage Range (starting-max) (mg) ¹	Weight Gain and Metabolic Effects ²	EPS and Akathisia	QT Prolongation	Notes
Aripiprazole [G] (Abilify, Abilify Discmelt) 2002	Schizophrenia (13+) Bipolar mania, monotherapy and adjunctive (10+) Bipolar maintenance, monotherapy and adjunctive Depression adjunct Irritability in autism (6–17) Tourette's disorder (6–18) Agitation in schizophrenia or bipolar (IM only) Acute schizophrenia relapse (LAI only)	Tablet: 2, 5, 10, 15, 20, 30 ODT: 10, 15 Liquid: 1 mg/mL LAI: Maintena (see fact sheet)	2–30 QD	Moderate	High (mainly akathisia)	Low	Can be “activating”
Asenapine (Saphris) 2009	Schizophrenia Bipolar mania, monotherapy and adjunctive (10+)	Tablet: 2.5, 5, 10 (sublingual only)	5–10 BID	Moderate	Moderate	Low	Avoid food or drink for 10 minutes after taking; sedating
Clozapine [G] (Clozaril, FazaClo, Versacloz) 1989 Generic not available for oral suspension	Treatment-resistant schizophrenia Recurrent suicidal behavior in schizophrenia or schizoaffective disorders	Tablet: 25, 50, 100, 200 ODT: 12.5, 25, 100, 150, 200 Oral suspension: 50 mg/mL	12.5–450 BID	High	Low	Low	Probably most effective AP, though data in kids limited

PRAZOSIN (Minipress) Fact Sheet [G]

PEDIATRIC FDA INDICATIONS:

None.

ADULT FDA INDICATIONS:

Hypertension.

OFF-LABEL USES:

PTSD.

DOSAGE FORMS:

Capsules (G): 1 mg, 2 mg, 5 mg.

PEDIATRIC DOSAGE GUIDANCE:

- PTSD (off-label): Doses studied are 0.02–0.3 mg/kg given at bedtime; titrate dose slowly to minimize possibility of “first-dose” orthostatic hypotension. Start 1 mg QHS x 3 days, increase slowly based on response. Target 1 mg–5 mg/day; doses up to 15 mg daily studied.
- May dose-divide BID to target daytime PTSD-associated arousal symptoms.

MONITORING: BP.

COST: \$

SIDE EFFECTS:

- Most common: somnolence, dizziness, headache, weakness.
- Serious but rare: orthostasis and syncope; prolonged erections and priapism have been reported.

MECHANISM, PHARMACOKINETICS, AND DRUG INTERACTIONS:

- Alpha-1 adrenergic receptor antagonist.
- Metabolism primarily hepatic (non-CYP450); $t_{1/2}$: 2–3 hours.
- Caution with other antihypertensive agents, diuretics, and PDE5 inhibitors (eg, Viagra) that may have additive hypotensive effects.

EVIDENCE AND CLINICAL PEARLS:

- Initial studies in adults showed improvement in trauma-related nightmares and sleep quality when dosed at bedtime. Subsequent randomized controlled trials have shown positive effects on daytime PTSD symptoms also when dosed BID.
- A retrospective chart review of 34 kids (5–18 years) with PTSD suggested prazosin is well-tolerated and associated with improvements in nightmares and sleep.

FUN FACT:

Prazosin is an effective drug for kids in the treatment of serious scorpion envenomations with significant sympathetic symptoms.

BOTTOM LINE:

Although there are only minimal data, consider prazosin for PTSD in kids, especially for PTSD-associated sleep disturbances and nightmares, but monitor BP.

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MAGNESIUM Fact Sheet

PEDIATRIC AND ADULT FDA INDICATIONS:

None.

OFF-LABEL USES:

Anxiety; ADHD.

DOSAGE FORMS:

Capsules, tablets, softgels, chewables, oral liquid: 100 mg, 250 mg, 400 mg, 500 mg.

PEDIATRIC DOSAGE GUIDANCE:

- Anxiety: max 65 mg/day for kids 1–3 years; max 110 mg/day for kids 4–8 years; max 350 mg/day for kids >8 years.
- ADHD: Magnesium aspartates and lactates 6 mg/kg/day.

COST: \$

SIDE EFFECTS:

- Most common: well-tolerated, although higher doses may cause loose stools and diarrhea.
- Serious but rare: Excessive intake can lead to symptomatic hypermagnesemia, which presents as hypotension, nausea, vomiting, and bradycardia.

MECHANISM, PHARMACOKINETICS, AND DRUG INTERACTIONS:

- Essential mineral used in the human body, as a cofactor.
- Excreted in urine; $t_{1/2}$: unknown.
- Drug interactions generally unlikely.

EVIDENCE AND CLINICAL PEARLS:

- An overview of 18 studies in adults suggested magnesium had a beneficial effect on subjective anxiety; however, they were all poor-quality studies, and the review recommended better controlled trials.
- Magnesium supplements are formulated as various salts (citrate, chloride, gluconate, aspartate, oxide, pidolate, and orotate) or combined with other ingredients (eg, multivitamin).
- Used most often to prevent or treat deficiency or as a laxative. It is sometimes used for pregnancy-induced leg cramps or restless legs syndrome.
- In kids, it may be used for treating anxiety. Magnesium is frequently mentioned in treatment of anxiety in autism; however, research beyond case reports is lacking.
- Although the Natural Medicines database deems magnesium “insufficient reliable evidence to rate,” 1 study suggests that elemental magnesium 300 mg/day (adults, mostly women) combined with hawthorn and California poppy (not available in the US) may be useful in the treatment of mild to moderate anxiety.
- Also considered “insufficient reliable evidence to rate” is magnesium’s role in children with ADHD. Preliminary data (no randomized, placebo-controlled trials) suggest supplementation may improve hyperactivity in children with ADHD who have low magnesium levels.

FUN FACT:

- In 1618, a farmer in Epsom, England had cows who were refusing to drink from a local well. It turned out the water had a bitter taste but healed scratches and rashes. Thus was the birth of the magnesium compound: epsom salts ($MgSO_4 \cdot 7H_2O$).

BOTTOM LINE:

- Magnesium supplementation may improve symptoms of ADHD or anxiety in children with a deficiency, but supporting or convincing evidence is lacking.

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