

Psychotropic Medications in Children and Adolescents: Guide for Use and Monitoring

This document was developed by Community Care of North Carolina with the assistance of the Medication Management Workgroup of the Fostering Health NC initiative, a project of the NC Pediatric Society (www.ncpeds.org/fosteringhealthnc). The information contained in this guide is not intended to substitute or act as medical advice. If you have any questions about a medication prescribed to a child or adolescent in your care, contact the prescriber or a licensed medical professional.

Definition of Psychotropic Medication:

Medication used in the treatment of mental illnesses and capable of affecting the mind, emotions, and behavior.

Use of this Information:

The tables below offer information for care managers and foster and resource parents to use when they want to learn more about certain psychotropic medications. Specific information is outlined including the therapeutic class, brand and generic names, FDA approved uses, common evidence-based uses, potential side effects, and medication-specific safety/effectiveness monitoring necessary when prescribed to a child or adolescent. Because few medications have been FDA approved for use in children 5 years of age and under, there is a column in the table that lists the FDA approved status and age ranges for the approved uses of each medication. This guide also provides a color-coded quick reference guide for each medication (Appendix A), questions that a foster or resource parent should ask a prescriber (Appendix B), and a glossary of terms (Appendix C). *Information provided in this document is based on "Psychotropic Medication Utilization Parameters for Children and Youth in Foster Care", 5th Version- Texas Dept. of FPS; Lexicomp.*

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ADHD Medications

Stimulants

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Amphetamine Mixed Salts	Adderall, Adderall XR	3 and older; 6 and older (XR)	None	<ul style="list-style-type: none"> • Increased blood pressure • Increased heart rate • Tics (abnormal movement most often in the face) • Weight loss • Loss of appetite • Sleep disturbance • Irritability/anxiety 	<ul style="list-style-type: none"> • Height • Weight • Heart rate • Blood pressure
Dextroamphetamine	Dexedrine, Zenzedi	3 and older			
Lisdexamfetamine	Vyvanse	6 and older			
Methylphenidate	Ritalin, Ritalin SR, Ritalin LA, Methylin, Methylin ER, Metadate ER, Metadate CD, Quillivant XR, Concerta	6 and older			
Dexmethylphenidate	Focalin, Focalin XR	6 and older			

Other ADHD Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Atomoxetine	Strattera	6 and older	None	<ul style="list-style-type: none"> • Increased blood pressure • Increased heart rate • Sleep disturbance • Stomach discomfort • Dizziness 	<ul style="list-style-type: none"> • Height • Weight • Heart rate • Blood pressure
Clonidine	Catapres, Kapvay	IR form not FDA approved for children; ER form ages 6-17	None	<ul style="list-style-type: none"> • Low blood pressure • Decreased heart rate • Feeling faint or dizzy • Feeling tired 	<ul style="list-style-type: none"> • Heart rate • Blood pressure
Guanfacine	Tenex, Intuniv	6 and older	None		

Depression & Anxiety Medications

SSRIs (Selective Serotonin Reuptake Inhibitors)

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Citalopram*	Celexa	18 and older	Obsessive Compulsive Disorder (OCD)	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Weight gain • Headache • Stomach discomfort • Sleep disturbance • Flu-like symptoms if stopped too quickly • Abnormal generalized bleeding risk 	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Height • Weight • Sodium levels in the blood
Escitalopram	Lexapro	12-17 for depression			
Fluoxetine	Prozac	8 and older for depression			
Paroxetine*	Paxil	18 and older			
Fluvoxamine	Luvox	8 and older for OCD			
Sertraline	Zoloft	6 and older for OCD			
Vilazodone*	Vibryd	18 and older			

*not approved for children and adolescents

SNRIs (Serotonin-Norepinephrine Reuptake Inhibitors)

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Venlafaxine*	Effexor, Effexor XR	18 and older	Obsessive Compulsive Disorder (OCD)	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Weight gain • Headache • Seizures • Hyponatremia/low blood sodium levels • Hepatic toxicity/liver damage • Skin reactions • Stomach discomfort • Sleep disturbance • Flu-like symptoms if stopped too quickly • Elevated blood pressure/pulse • Abnormal bleeding risk 	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Height • Weight • Blood pressure during initial dose adjustment and periodically thereafter • Hepatic function testing baseline and periodically • CBC and EKG baseline and periodically
Duloxetine	Cymbalta	18 and older			
Desvenlafaxine*	Pristiq	18 and older			
Clomipramine	Anafranil	10 and older for OCD			
Levamlnacipram*	Fetzima	18 and older			
*not approved for children and adolescents					

Depression & Anxiety Medications

Other Depression & Anxiety Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Mirtazapine*	Remeron	18 and older	None	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Abnormal bleeding risk • Weight gain • Headache • Hyponatremia • Stomach discomfort • Sleep disturbance • Flu-like symptoms if stopped too quickly • Dizziness • Liver toxicity, seizures, and white blood cell decrease risk with mirtazapine 	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Height • Weight • Blood pressure-during titration and periodically • Hepatic function testing baseline and periodically • CBC baseline and periodically • Cholesterol testing at baseline and periodically
Vortioxetine*	Brintellix/Trintellix	18 and older	None		
Bupropion*	Wellbutrin, Wellbutrin XL/SR	18 and older	ADHD	<ul style="list-style-type: none"> • Increased blood pressure, elevated pulse • Seizure risk • Discontinuation Syndrome if stopped abruptly • Appetite suppression • Suicidal thoughts or behavior 	<ul style="list-style-type: none"> • Blood pressure and pulse-during titration and periodically • Suicidal thoughts or behavior • Seizure risk with other medications • Weight

*not approved for children and adolescents

Second Generation Antipsychotic Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Aripiprazole	Abilify	Approved for children 10 and older for bipolar disorder, manic or mixed episodes. Approved for adolescents 13 to 17 -for schizophrenia and bipolar disorder. Approved for 6 to 17 year olds for irritability associated with autistic disorder	Approved for bipolar mania or mixed episodes (10-17 years); schizophrenia (13-17 years); irritability associated with autism spectrum disorder (6-17 years)	<ul style="list-style-type: none"> • Acute Extrapyramidal symptoms • Tardive dyskinesia • Neuroleptic malignant syndrome • Hyperglycemia, diabetes mellitus • Elevated prolactin, gynecomastia, amenorrhea • Weight gain • Dyslipidemia • CBC abnormalities • Lowered seizure threshold • Dysphagia • Hyperthermia/lowered heat tolerance • Cognitive impairment (confusion and/or inability to focus that differs from baseline) 	<ul style="list-style-type: none"> • Fasting plasma glucose or hemoglobin A1c and lipids at baseline, 3 months, then every 6 months • EKG- baseline and periodically • CBC- baseline and periodically • Blood pressure each visit • Pulse each visit • Weight/height/BMI at each visit • EPS evaluation baseline and weekly until dose stabilized • Tardive dyskinesia evaluation every 3 months • Clozapine-requires REMS • Vision assessment for changes annually • Sexual function-at each visit for first 12 months then every 6 months
Quetiapine	Seroquel, Seroquel XR	Approved for adolescents 13 and older for schizophrenia. Approved for young adults 18 and older for bipolar disorder. Approved for 10 to 17 years olds for manic and mixed episodes of bipolar disorder	Approved for bipolar mania (10-17 years); schizophrenia (13-17 years)		
Olanzapine	Zyprexa	ETC. 18 and older- schizophrenia; 13 to 17- second line treatment for manic or mixed episodes of bipolar disorder	Approved for bipolar mania or mixed episodes and schizophrenia (13-17 years)		
Risperidone	Risperdal	ETC. 13 and older- schizophrenia; 10 and older- bipolar mania and mixed episodes; 5 to 16- irritability associated with autism	Approved for schizophrenia (13-17 years); bipolar mania or mixed episodes (10-17 years); irritability associated with autism spectrum disorder (5-16 years)	Same as previous page	Same as previous page

Second Generation Antipsychotic Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Clozapine*	Clozaril, FazaClo, Versacloz	18 and older	None		
Asenapine	Saphris	18 and older	Approved for acute treatment of bipolar mania and mixed episodes (10-17 years)		
Iloperidone*	Fanapt	18 and older	None		
Paliperidone	Invega	12 and older	Approved for treatment of schizophrenia (12-17 years)		
Ziprasidone*	Geodon	18 and older	None		
Lurasidone*	Latuda	18 and older	None		
Brexpiprazole*	Rexulti	18 and older	None		
*not approved for children and adolescents					

Mood Stabilizer Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Carbamazepine	Tegretol, Tegretol XR, Epiol, Carbatrol, Equetro	Not FDA approved for bipolar disorder or mood lability in children and adolescents*	FDA approved for seizures-all ages	<ul style="list-style-type: none"> • Stevens-Johnson Syndrome (severe rash) • Aplastic anemia • Suicidal ideation • Teratogenicity • CBC abnormalities • Hyponatremia • Induces metabolism of many other medications and decreases their efficacy-including oral contraceptives • Withdrawal seizures • Ataxia/dizziness • Sedation • Slurred speech • Nausea/vomiting 	<ul style="list-style-type: none"> • Baseline then every 6-12 months CBC with differential, comprehensive chemistry panel[‡], EKG • Pregnancy test at baseline • Drug levels every 1-2 weeks for initial 2 months, then every 3-6 months
Divalproex Sodium	Depakote, Depakote ER, Depakote Sprinkles	Not FDA approved for bipolar disorder or mood lability in children and adolescents*	FDA approved for seizures-ages 2 and older	<ul style="list-style-type: none"> • Transient increase in liver function tests up to hepatotoxicity • Pancreatitis • Bruising • Urea cycle disorders • Teratogenicity • Suicidal ideation • CBC abnormalities • Hyperammonemia • Multi-organ hypersensitivity reaction • Polycystic ovary syndrome • Weight gain • Nausea/vomiting • Alopecia • Withdrawal seizures 	<ul style="list-style-type: none"> • Baseline then every 6 months CBC with differential, comprehensive chemistry panel[‡] • Pregnancy test at baseline • Drug levels weekly for 2-3 weeks, then every 3-6 months • Weight • Suicidal thoughts or behavior

Mood Stabilizer Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Lithium	Eskalith, Eskalith CR, Lithobid	Approved for adolescents age 12 and older for bipolar disorder	Approved for manic episodes and bipolar maintenance for children ≥ 12 years	<ul style="list-style-type: none"> • Narrow therapeutic index drug • Chronic renal impairment • Polyurea/polydipsia • Tremor of hands, upper extremities • Diarrhea • Nausea/vomiting (take with food) • Lethargy, weakness, confusion • Hypothyroidism • Teratogenicity 	<ul style="list-style-type: none"> • Baseline then every 6-12 months CBC with differential, comprehensive chemistry panel[‡], EKG, thyroid function testing • Pregnancy test at baseline • Drug levels after 1-2 weeks of treatment or each dosage change, monthly for 3 months, then every 3-6 months
Lamotrigine	Lamictal	Not FDA approved for bipolar disorder or mood lability in children and adolescents*	FDA approved for seizures ages 2 and older	<ul style="list-style-type: none"> • Potential Stevens-Johnson Syndrome (severe rash)-risk increases with rapid titration • Multi-organ hypersensitivity reaction • Suicidal ideation • Dizziness/Ataxia • Headache • Nausea/vomiting • Diplopia • Aseptic meningitis • Drug interaction with divalproex increases lamotrigine; with carbamazepine, phenytoin decreases lamotrigine levels • Concomitant use with oral contraceptives decreases lamotrigine levels • Withdrawal seizures 	<ul style="list-style-type: none"> • Dermatologic evaluation at baseline and patient education regarding reporting of new skin rash • Suicidal thoughts or behavior

Mood Stabilizer Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Oxcarbazepine	Trileptal	Not FDA approved for bipolar disorder or mood lability in children and adolescents*	FDA approved for seizures ages 4 and older	<ul style="list-style-type: none"> Hyponatremia risk Anaphylactic reactions with angioedema Drug-drug interaction potential Dizziness, ataxia Diplopia Tremor Slurred speech Serious dermatologic reactions Withdrawal seizures Multi-organ hypersensitivity Hematologic changes 	<ul style="list-style-type: none"> Electrolytes at baseline and every 3-6 months
<p>* While difficult to establish a definitive diagnosis of bipolar disorder in children and adolescents, the mood stabilizing antiepileptic agents listed, while not FDA approved for use in children and adolescents, do have some body of published evidence based support and have received FDA approval for seizure disorder management, suggested a reasonable safety margin for that use.</p>					<p>‡Comprehensive chemistry panel includes: electrolytes, renal and hepatic function, and metabolic panel</p>

Sleep Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Diphenhydramine	Benadryl	Approved for children 12 and older for the treatment of insomnia	None	<ul style="list-style-type: none"> • Drowsiness • Dizziness • Dry mouth • Nausea • Nervousness • Blurred vision • Decreased mental alertness • Paradoxical excitation • May lower seizure threshold 	<ul style="list-style-type: none"> • Caution – Assess compliance with avoiding operation of machinery or power equipment until medication effects with use of this medication are determined • Daytime sedation/hangover
Trazodone*	Desyrel	18 and older	None	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Abnormal generalized bleeding risk • Hyponatremia • Stomach discomfort • Flu-like symptoms if stopped too quickly • Orthostatic hypotension/syncope • Cognitive/motor impairment • Priapism-males • QT prolongation and risk of sudden cardiac death 	<ul style="list-style-type: none"> • Suicidal thoughts or behavior • Seizure risk with other medications • Weight • Blood pressure baseline and periodically • EKG baseline and periodically
Eszopiclone*	Lunesta	18 and older	None	<ul style="list-style-type: none"> • Abnormal thinking and behavioral changes • Withdrawal effects • Drug abuse and dependence • Tolerance 	<ul style="list-style-type: none"> • Caution - Do not operate machinery or power equipment until medication effects with use of this medication • Daytime sedation/hangover

Sleep Medications

Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Melatonin	Dosing: 0.05-0.15mg/kg/day up to total dose of 5mg/day in children and adolescents	Not FDA regulated	Regulated by FDA as a dietary supplement and not as a medication	<ul style="list-style-type: none"> Sedation May adversely affect reproductive organ development Give directly before sleep onset desired due to short half-life 	<ul style="list-style-type: none"> Caution - Do not operate machinery or power equipment until medication effects with use of this medication Daytime sedation/hangover
Ramelteon*	Rozerem	18 and older	None	<ul style="list-style-type: none"> Abnormal thinking and behavioral changes CNS depression Decreased testosterone Hyperprolactinemia 	<ul style="list-style-type: none"> Caution - Do not operate machinery or power equipment until medication effects with use of this medication Daytime sedation/hangover
Hydroxyzine	Vistaril, Atarax	All ages for anxiety- and all ages for Pruritis/ for the treatment of Itchy skin-	Approved for anxiety and tension; approved as pre-procedural sedation and following general anesthesia	<ul style="list-style-type: none"> Drowsiness Dizziness Dry mouth Nausea Nervousness Blurred vision Decreased mental alertness Paradoxical excitation associated with small risk of QT prolongation and Torsades 	<ul style="list-style-type: none"> Caution - Do not operate machinery or power equipment until medication effects with use of this medication Daytime sedation/hangover

*not approved as a sedative/hypnotic in children and adolescents

Appendix A: Color-Coded Psychotropic Medications - Match the Color with the Therapeutic Class Above

Amphetamine Mixed Salts	Eszopiclone	Quetiapine
Abilify	Fanapt	Quillivant XR
Adderall, Adderall XR	Fetzima	Ramelteon
Anafranil	Fluoxetine	Remeron
Aripiprazole	Fluvoxamine	Rexulti
Asenapine	Focalin, Focalin XR	Risperdal
Atomoxetine	Geodon	Risperidone
Benadryl	Guanfacine	Ritalin, Ritalin SR/LA
Brexiprazole	Hydroxyzine	Rozerem
Brintellix	Iloperidone	Saphris
Bupropion	Invega	Seroquel, Seroquel XR
Carbamazepine	Lamictal	Sertraline
Catapres, Kapvay	Lexapro	Strattera
Celexa	Lithium	Tegretol, Tegretol XR, Eptol, Carbatrol, Equetro
Citalopram	Lisdexamfetamine	Tenex, Intuniv
Clomipramine	Lamotrigine	Trazodone
Clonidine	Latuda	Trileptal
Clozapine	Levmilnacipram	Trintellix
Clozaril, FazaClo, Versacloz	Lunesta	Venlafaxine
Concerta	Lurasidone	Vibryd
Cymbalta	Luvox	Vilazodone
Depakote, Depakote ER, Depakote Sprinkles	Melatonin	Vistaril, Atarax
Desvenlafaxine	Metadate ER, Metadate CD	Vortioxetine
Desyrel	Methylin, Methylin ER	Vyvanse
Dexedrine, Zenedi	Methylphenidate	Wellbutrin, XL/SR
Dexmethylphenidate	Mirtazapine	Ziprasidone

Appendix A: Color-Coded Psychotropic Medications - Match the Color with the Therapeutic Class Above

Dextroamphetamine	Olanzapine	Zoloft
Diphenhydramine	Oxcarbazepine	Zyprexa
Divalproex Sodium	Paliperidone	
Duloxetine	Paroxetine	
Effexor, Effexor XR	Paxil	
Escitalopram	Pristiq	
Eskalith, Eskalith CR, Lithobid	Prozac	

Appendix B: Questions to Ask the Prescriber

1. Are there behavioral interventions that might be tried before medication is used, or effectively used in combination with medication, which may help to lower the required medication dose?
2. Does research support the use of the recommended medication for a child that is my child's age and with similar needs?
3. How does medication fit within the overall treatment plan and how will we coordinate with other treatment, such as therapy, school behavior plans, and more?
4. Is the prescribed medication more, less, or equally effective as other non-medicinal interventions?
5. What should we be looking for in changes in behavior, changes in symptoms, and whom should we contact with questions about these changes and the medication?
6. How long will it take before we should begin seeing behavioral changes? Will those potential changes be significant or minor?
7. What are the potential risks and benefits of the medication and other treatment options, and what are the potential side effects?
8. If a medication dose is missed or stopped abruptly, are there potential adverse effects? What might those be and what should I do if I observe them?
9. How will our family, our child, and the treating provider monitor progress, behavior changes, symptoms, and safety concerns? (Close monitoring is critical with all medications at all times, however, it is especially important when medication is started and when dosages are changed.)
10. How will we know when it is time to talk about stopping medication treatment and what steps need to be taken before the medication is stopped?
11. How can we best develop a clear communication plan between our family and the treating providers (therapist and psychiatrist) to ensure open lines of communication?
12. What if my child has a crisis and is hospitalized? Who can we contact in your office, especially if someone wants to change medications?

Adapted from NAMI, "Choosing the Right Treatment: What Families Need to Know about Evidence-Based Practices, 2007."

Appendix C: Glossary of Terms

BMI	Stands for Body Mass Index. A measure of body fat based upon height and weight.
CBC	Stands for complete blood count. Lab test used to monitor for abnormalities in blood cells, e.g., for anemia.
Discontinuation Syndrome	A condition that can occur following the interruption, dose reduction, or discontinuation of antidepressant drugs. The symptoms can include flu-like symptoms and disturbances in sleep, senses, movement, mood, and thinking. In most cases symptoms are mild, short-lived, and go away without treatment.
ECG	Stands for electrocardiogram.
EEG	Stands for electroencephalogram.
EPS	Stands for extrapyramidal side effects- medication induced abnormal muscle function and include muscle stiffness, tremor, facial tics/movements, and severe muscle spasm.
ER	Stands for extended release and is a formulation of a medication designed to decrease the number of times per day in which the medication must be taken.
Evidence Based Use	Substantial peer reviewed clinical trials information is in the published medical literature supporting the safety and effectiveness of a certain practice or medication use.
FDA	Stands for (U.S.) Food and Drug Administration, the agency which reviews and approves medications for use in the United States.
Hemoglobin A1c	A laboratory measurement of the amount of glucose in the hemoglobin of the red blood cells. Provides a measure of average glucose over the previous 3 months.
Hepatic Toxicity	Liver damage which may be happen from a variety of potential causes.
Hyperammonemia	Metabolic problem due to elevated ammonia in the blood and is a medical emergency.
Hyponatremia	A condition of low blood sodium (Na) levels which may be associated with a number of medical symptoms such as decreased ability to think, headaches, nausea, and poor balance. More severe symptoms include confusion, seizures, and coma.
Indication	A term that means the FDA has approved a medication for use for a specific purpose and age group.
IR	Stands for immediate release of a form of a medication. May be necessary to take multiple times per day.
LFTs	Stands for Liver function tests.
MAOIs	Stands for Monoamine Oxidase Inhibitors. A class of medications used for depression.

MRI	Stands for Magnetic Resonance Imaging.
Narrow Therapeutic Index Drug	A medication for which the safe and effective range (as measured by blood levels) are close to the toxic range (e.g. lithium, carbamazepine, phenytoin).
Orthostatic Blood Pressure Changes	Lowering of blood pressure, typically upon sitting up or standing, which may be related to some medications and may contribute to falls and/or accidents.
PRN	A term that means the medication should be taken as needed.
Prolactin	A hormone produced by the pituitary gland.
Second Generation Antipsychotics	A classification of antipsychotics which are more often used in children and adolescents as compared to first generation antipsychotics which are more commonly associated with abnormal neurologic movements.
Serum Creatinine	A lab test used to calculate an estimate of kidney function.
Teratogenicity	Property of some medications meant to indicate that they are may potentially cause abnormalities in the developing fetus.
TFTs	Thyroid Function Tests.