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.

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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	Medication	ıs	
		:	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	Increased blood pressureIncreased heart rate	HeightWeight
Dextroamphetamine	Dexedrine, Zenzedi	3 and older		Tics (abnormal movement	Heart rate
Lixdexamfetamine Methylphenidate	Vyvanse Ritalin, Ritalin SR, Ritalin LA, Methylin, Methylin ER, Metadate ER, Metadate CD, Quillivant XR, Concerta	6 and older 6 and older		 most often in the face) Weight loss Loss of appetite Sleep disturbance Irritability/anxiety 	Blood pressure
Dexmethylphenidate	Focalin, Focalin XR	6 and older	1		
, ,	,	Other A	DHD Medication	S	-
Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Atomoxetine	Strattera	6 and older	None	 Increased blood pressure Increased heart rate Sleep disturbance Stomach discomfort Dizziness 	HeightWeightHeart rateBlood pressure
Clonidine	Catapres, Kapvay	IR form not FDA approved for children; ER form ages 6-17	None	 Low blood pressure Decreased heart rate Feeling faint or dizzy Feeling tired 	Heart rateBlood 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	 Suicidal thoughts or 	 Suicidal thoughts or
Escitalopram	Lexapro	12-17 for	Compulsive	behavior	behavior
		depression	Disorder (OCD)	 Weight gain 	Height
Fluoxetine	Prozac	8 and older for		 Headache 	Weight
		depression		 Stomach discomfort 	Sodium levels in the blood
Paroxetine*	Paxil	18 and older		 Sleep disturbance 	
Fluvoxamine	Luvox	8 and older for OCD		 Flu-like symptoms if 	
Sertraline	Zoloft	6 and older for OCD		stopped too quickly	
Vilazodone*	Vibryd	18 and older		 Abnormal generalized bleeding risk 	

^{*}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	Suicidal thoughts or behavior	Suicidal thoughts or behavior
Duloxetine	Cymbalta	18 and older	Disorder (OCD)	Weight gain Headache	• Height
Desvenlafaxine*	Pristiq	18 and older		• Seizures	WeightBlood pressure during
Clomipramine	Anafranil	10 and older for OCD		Hyponatremia/low blood sodium levels	initial dose adjustment and periodically thereafter
Levmilnacipram*	Fetzima	18 and older		Hepatic toxicity/liver damage	Hepatic function testing baseline and periodically
*not approved for childr	ren and adolescents			 Skin reactions Stomach discomfort Sleep disturbance Flu-like symptoms if stopped too quickly Elevated blood pressure/pulse Abnormal bleeding risk 	CBC and EKG baseline and periodically

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	Suicidal thoughts or behavior	Suicidal thoughts or behavior
Vortioxetine*	Brintellix/Trintellix	18 and older	None	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	 Height Weight Blood pressure-during titration and periodically Hepatic function testing baseline and periodically CBC baseline and periodically Cholesterol testing at baseline and periodically
Bupropion*	Wellbutrin, Wellbutrin XL/SR	18 and older	ADHD	 Increased blood pressure, elevated pulse Seizure risk Discontinuation Syndrome if stopped abruptly Appetite suppression Suicidal thoughts or behavior 	 Blood pressure and pulse-during titration and periodically Suicidal thoughts or behavior Seizure risk with other medications Weight

	Secon	d Generation	Antipsychoti	ic Medications	
Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Aripiprazole Quetipine	Abilify Seroquel, Seroquel XR	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) Approved for bipolar	 Acute Extrapyramidal symptoms Tardive dyskinesia Neuroleptic malignant syndrome Hyperglycemia, diabetes mellitus Elevated prolactin, gynecomastia, amenorrhea Weight gain Dyslipidemia CBC abnormalities 	 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
Quetipine	Sel oquely sel oquel yill	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	mania (10-17 years); schizophrenia (13-17 years)	 Lowered seizure threshold Dysphagia Hyperthermia/lowered heat tolerance Cognitive impairment (confusion and/or inability to focus that differs from 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
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

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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		

		Mood St	tabilizer Med	dications	
Generic Name	Brand Names	FDA Approval Age/Indication	Other Common Uses in Children	Potential Side Effects	Monitoring
Carbamazepine	Tegretol, Tegretol XR, Epitol, Carbatrol, Equetro	Not FDA approved for bipolar disorder or mood lability in children and adolescents*	FDA approved for seizures-all ages	 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 	 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	 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 	 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 St	abilizer Med	dications	
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	 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 	 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	 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 	 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	 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 	Electrolytes at baseline and every 3-6 months			
agents listed, while no	_	hildren and adolescents	, do have some body of	, the mood stabilizing antiepileptic published evidence based support margin for that use.	[‡] Comprehensive chemistry panel includes: electrolytes, renal and hepatic function, and metabolic panel			

		Sle	ep Medicati	ons	
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	 Drowsiness Dizziness Dry mouth Nausea Nervousness Blurred vision Decreased mental alertness Paradoxical excitation May lower seizure threshold 	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	 Suicidal thoughts or behavior Abnormal generalized bleeding risk Hyponatremia Stomach discomfort Flu-like symptoms if stopped too quickly Orthostatic hypotension/syncopy Cognitive/motor impairment Priapism-males QT prolongation and risk of sudden cardiac death 	 Suicidal thoughts or behavior Seizure risk with other medications Weight Blood pressure baseline and periodically EKG baseline and periodically
Eszopliclone*	Lunesta	18 and older	None	 Abnormal thinking and behavioral changes Withdrawal effects Drug abuse and dependence Tolerance 	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	 Sedation May adversely affect reproductive organ development Give directly before sleep onset desired due to short half-life 	 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	 Abnormal thinking and behavioral changes CNS depression Decreased testosterone Hyperprolactinemia 	 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 preprocedural sedation and following general anesthesia	 Drowsiness Dizziness Dry mouth Nausea Nervousness Blurred vision Decreased mental alertness Paradoxical excitation associated with small risk of QT prolongation and Torsades 	Caution - Do not operate machinery or power equipment until medication effects with use of this medication Daytime sedation/hangover		

Appendix A: Color-Coded Psychotropic Medications - Match the Color with the Therapeutic Class Above		
Amphetamine Mixed Salts	Eszopliclone	Quetipine
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
Brexpiprazole	Hydroxyzine	Rozerem
Brintellix	lloperidone	Saphris
Bupropion	Invega	Seroquel, Seroquel XR
Carbamazepine	Lamictal	Sertraline
Catapres, Kapvay	Lexapro	Strattera
Celexa	Lithium	Tegretol, Tegretol XR, Epitol, Carbatrol, Equetro
Citalopram	Lixdexamfetamine	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, Zenzedi	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 A medication for which the safe and effective range (as measured by blood

Index Drug levels) are close to the toxic range (e.g. lithium, carbamazepine, phenytoin).

Orthostatic Blood Lowering of blood pressure, typically upon sitting up or standing, which Pressure Changes may be related to some medications and may contribute to falls and/or

accidents.

A term that means the medication should be taken as needed.

Prolactin A hormone produced by the pituitary gland.

Second Generation 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.

PRN