

Psychotropic Medications Used in Childhood



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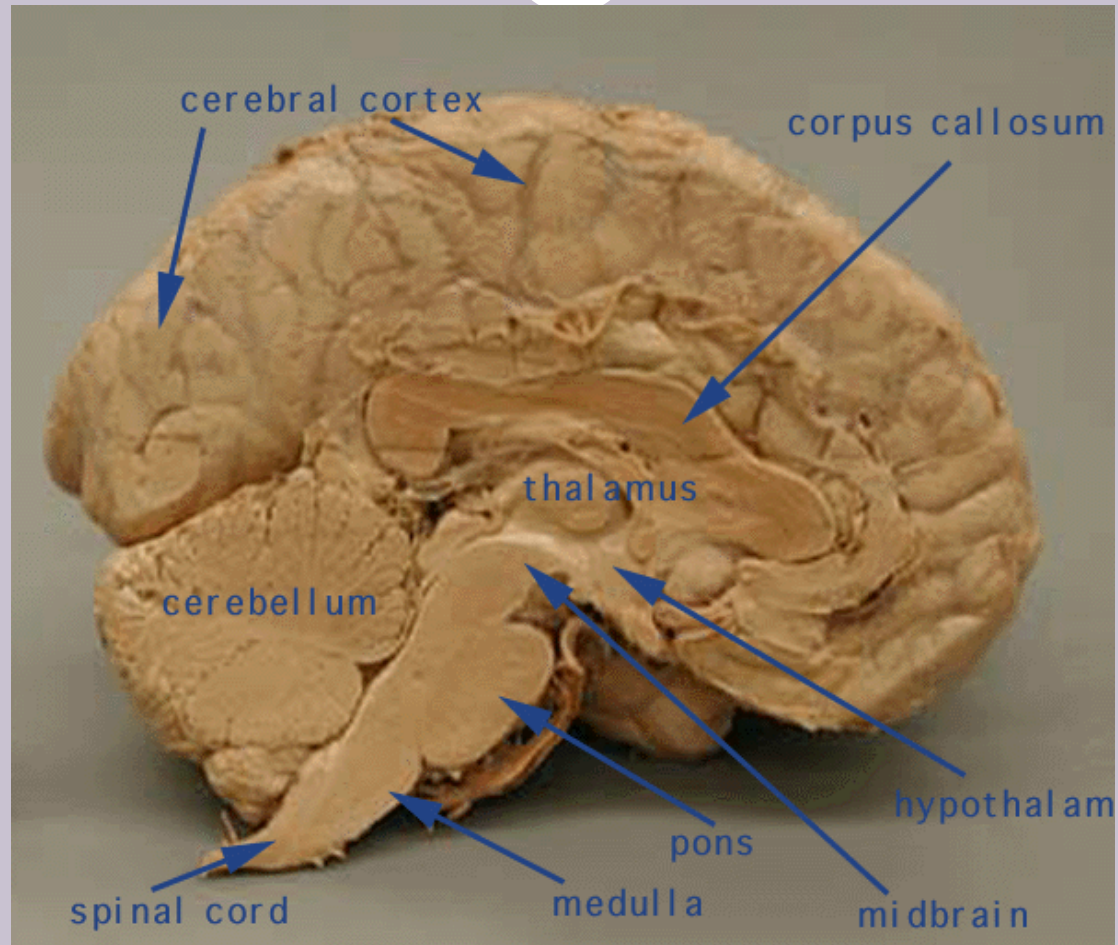


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Sagittal View of the Brain

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Stimulant Medication

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- Methylphenidate (Ritalin, Concerta, Focalin, Ritalin SR, Ritalin LA)
- Amphetamines (Dexedrine, Adderall, Adderall XR)
- Mechanism of action not completely understood
- Stimulants act by causing release of catecholamines from the dopamine axons and blocking their reuptake.



Stimulant Medication

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- Stimulant medication is used to treat attention deficit hyperactivity disorder (ADHD).
- In the classroom, stimulants decrease interrupting and motor restlessness, increase on-task behavior, and reduce ADHD symptoms.

Stimulant Medication

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- At home, stimulants improve parent-child interactions, on-task behavior, homework completion, and compliance.
- Stimulants may improve the symptoms of comorbid conduct disorder or comorbid anxiety disorder.

Stimulant Medication

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- Common side effects of stimulant medication include:
 - Headache
 - Stomachache
 - Decreased appetite
 - Jitteriness
 - Insomnia

Adrenergic Agonists

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- Clonidine (Catapres)
- Guanfacine (Tenex)
- First developed as antihypertensive agents.
- Alpha-2 adrenergic agonists have effects on norepinephrine (NE) and other neurotransmitter systems

Adrenergic Agonists

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- Used in the treatment of :
 - ADHD
 - Aggressive Behavior
 - Insomnia
- There have been several case reports of sudden death in children on the drug combination Ritalin and Clonidine.

Adrenergic Agonists

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- Common side effects of adrenergic agonists include:
 - Dry mouth**
 - Drowsiness**
 - Dizziness**
 - Sedation**
 - Hypotension and bradycardia**
 - Fatigue**

Selective Serotonin Reuptake Inhibitors (SSRIs)

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- Fluoxetine (Prozac)
- Sertraline (Zoloft)
- Paroxetine (Paxil)
- Fluvoxamine (Luvox)
- Citalopram (Celexa)
- Escitalopram oxalate (Lexapro)

Selective Serotonin Reuptake Inhibitors (SSRIs)

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- **SSRIs used to treat a variety of disorders:**
 - Major Depression
 - Social Anxiety (Social Phobia)
 - Generalized Anxiety Disorder (GAD)
 - Post Traumatic Stress Disorder (PTSD)
 - Eating Disorders
 - Obsessive Compulsive Disorder (OCD)

Selective Serotonin Reuptake Inhibitors (SSRIs)

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- Common side effects of SSRIs include:
 - Sexual dysfunction
 - Nausea
 - Drowsiness
 - Constipation
 - Nervousness
 - Fatigue

Selective Serotonin Reuptake Inhibitors (SSRIs)



- **Common side effects of SSRIs:**
 - Headache
 - Dizziness
 - Dry mouth
 - Insomnia
 - Restlessness
 - Tremor

Atypical Antipsychotics

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- Clozapine (Clozaril)
- Olanzapine (Zyprexa)
- Quetiapine (Seroquel)
- Risperidone (Risperdal)
- Ziprasidone (Geodon)
- Aripiprazole (Abilify)

Atypical Antipsychotics

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- Atypical antipsychotic medications are used to treat a range of problems in children and adolescents.
- Clinical effects of the antipsychotic agents are related to their affinity for a variety of receptors in the central nervous system (dopamine, muscarinic, alpha-adrenergic, and histamine receptors).

Atypical Antipsychotics

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- Side effects of atypical antipsychotic medications include:
 - Extrapyrarnidal side effects (acute dystonic reactions (ADRs), drug-induced Parkinsonism, and akathisia)
 - Tardive dyskinesia (characterized by choreoathetoid movements)
 - Seizures
 - Weight Gain


Atypical Antipsychotics

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- **Additional side effects include:**
 - Liver dysfunction
 - Sedation
 - Anticholinergia (dry mouth, blurred vision, constipation, urinary retention, & tachycardia)
 - Cardiovascular effects (hypotension, QTc prolongation).

Mood Stabilizers

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- Lithium carbonate (Eskalith)
- Divalproex sodium (Depakote)
- Gabapentin (Neurontin)
- Topiramate (Topamax) 
- Carbamazepine (Tegretol, Carbatrol)
- Lamotrigine (Lamictal)

Mood Stabilizers

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- Lithium is used to treat mania in adolescents and adults with bipolar disorder.
- Precise neurobiological mechanisms through which lithium reduces acute mania remain uncertain.
- Common side effects—neuronal, gastrointestinal, ocular, and urinary.

Mood Stabilizers

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- Depakote—hypotheses about mechanisms of action include its enhancement of GABA accumulation in several cerebral regions.
- Common side effects—tremors, thrombocytopenia, alopecia, diarrhea, vomiting, anorexia (seen with high plasma levels).

Mood Stabilizers

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- Neurontin—may have antimanic efficacy in adults with bipolar disorder.
- Precise mechanism of action unknown.
- Common side effects are somnolence, dizziness, and asthenia.

Mood Stabilizers

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- Topamax—has shown preliminary antimanic and possibly antidepressant efficacy in treatment-refractory, manic patients with bipolar type I.
- Mechanism of action is unknown.
- Common side effects are somnolence and anorexia.

Mood Stabilizers

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- Tegretol—used to treat children with a variety of behavior problems.
- The molecular effects underlying Tegretol's mood stabilizing effects not established.
- Common side effects include leukopenia, skin rash, dizziness, diplopia, neutropenia, agranulocytosis.

Mood Stabilizers

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- Lamictal—sodium channel blocker.
- May have a bimodal spectrum of efficacy in the treatment of bipolar disorder.
- Common side effects include ataxia, dizziness, diplopia, headache, and skin rash.

Summary

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- Psychotropic medications are prescribed frequently to treat various childhood behavioral disorders (ADHD, CD, OCD, BD, etc.).
- Mechanism of action of most psychotropic medications is unknown.
- Polypharmacy is common; we need to watch for drug-drug interactions and side effects.

Medication References for Teachers

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- Helping Parents, Youth, and Teachers Understand Medications for Behavioral and Emotional Problems, by Mina K. Dulcan, M.D. and Claudia Lizarralde, M.D.
- American Academy of Child and Adolescent Psychiatry (www.aacap.org)
- Center for Health and Health Care in Schools (www.healthinschools.org)
- National Institute of Mental Health medication brochure published in 2002 (www.nimh.nih.gov/publicat/medicate.cfm)