PSYCHOPHARMACOLOGY

Childhood Disorders

Psychopharmacology Webinar Module 1: Overview of Psychopharmacology and Childhood Disorders

MODULE 1

Presenters:
Deborah P. Coehlo, PhD, CPNP, CPMHS, CFLE
Ronald Brown, PhD
Lyre Fribourg, PhD, BCBA-D

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SME: Dr. Ronald T. Brown, PhD

Dr. Ronald T Brown is a Professor and Dean in School of Integrated Health Sciences at University of Nevada, Las Vegas, USA. He served as the Associate Vice-Chancellor for Academic (Health Affairs) at the University of North Texas System. Dr. Brown completed his Ph.D. from Georgia State University and has been the past President of the Society of Pediatric Psychology and the Association of Psychologists of Academic Health Centers. He is a board certified clinical health psychologist and has been an active clinician, teacher, advocate and investigator. He served as a member of the Behavioral Medicine study section of the NIH and chaired several special panels at NIH. Dr. Ronald Brown's area of specialization includes behavioral sciences, pediatric psychology, attention deficit disorders, neuropsychology, psychopharmacology, learning disabilities and psychosocial oncology. He currently serves as the Editor of Professional Psychology: Research and Practice.

SME: Dr. Deborah Padgett Coehlo, PhD, C-PNP, PMHS, CFLE

Dr. Debbie Coehlo is a certified Pediatric Nurse Practitioner and Pediatric Mental Health Specialist with a Doctoral Degree in Family Sciences and Human Development. Dr. Coehlo is a Founder and Director of Juniper Pediatrics, a clinic modeled after John F Kennedy's multidisciplinary system of care. Using a holistic, integrated care model, Juniper provides counseling, medication management and family therapy for children with ASD, ADHD and other childhood mental health disorders. Dr. Coehlo completed her Master's in Nursing with a specialty in parent- child nursing. She spent 10 years working at the Child Development Center at the University of Washington in the Genetics Clinic and Multidisciplinary Clinic. In 1999, she complete her Doctorate degree in Human Development and Family Studies. She has continued to teach at the undergraduate and graduate level, and had pursued research in the area of social networking, transitioning to out of home care for families, and child development. Dr. Coehlo is a co- editor for the 4th and 5th edition of Family Health Nursing (F.A. Dais, 2010/2013) and has published several journal articles in the areas of families choosing residential care, families in transition, family health nursing, and care of children with special health care needs.

Panelist: Dr. Lyre Fribourg, PhD, BCBA-D

Dr. Lyre Fribourg is a Licensed Clinical Psychologist and a Board Certified Behavior Analyst. She balances her work schedule between her private practice in Los Angeles, California and a staff psychologist position at University of California, Los Angeles in the Developmental Behavioral Pediatrics clinic. She enjoys working in an interdisciplinary team and values the collaboration with physicians when it comes to diagnosing and treating children. She leads a parent group for newly diagnosed families of children with autism, and provides group parenting classes to families of young children. For more than 25 years, Dr. Fribourg has worked with children with neurodevelopmental disorders, and their families in homes, schools and communities. Additionally, she has shown her commitment to educating other professionals in the field through professional development workshops about behavior management in schools, and presenting at annual conventions for behavior analysts. Outside of her practice, she loves spending time with her husband and children, who give her yet another perspective on the challenges that come with parenting children.

Learning Objectives

1. Compare the different categories of medications used to treat common mental health disorders in childhood.
2. Explain the difference between treating internalizing behaviors versus externalizing behaviors.
3. Describe the steps taken by healthcare providers when deciding on which medications to use with a specific child.
4. List important factors to monitor when a child is on medication(s).
5. Discuss the importance of holistic care, including healthy lifestyle changes, healthy sleep patterns, behavior management counseling, parenting counseling, educational consultation, and use of supplements in addition to medications when treating childhood disorders.
6. List common myths associated with use of medications in the treatment of childhood disorders.
7. Explain the use of off label medications in children and the FDA medication approval process.
8. Apply knowledge to case studies of children with childhood disorders treated with medications.

Downloadable Tools

- Department of Health and Human Services Center for Medicare and Medicaid Services. (2015). Antidepressant Medications: U.S. Food and Drug Administration-Approved Indications and Dosages for Use in Pediatric Patients: Antidepressant Medications: U.S. Food and Drug Administration-Approved Indications and Dosages for Use in Pediatric Patients. https://www.cms.gov/Medicare-Medicaid-Coordination/Fraud-Prevention/Medicaid-Integrity-Education/Pharmacy-Education-Materials/Downloads/ad-pediatric-dosingchart11-14.pdf
- The Screen for Child Anxiety Related Disorders: https://www.midss.org/content/screen-child-anxiety-related-disorders-scared
- PHQ-9 Modified for Adolescents: https://missionhealth.org/wp-content/uploads/2018/04/Adolescent-Depression-Screening-PHQ-A-Form.pdf
- Wolraich, et. al. (2019). Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. Clinical Practice Guideline. American Academy of Pediatrics. https://pediatrics.aappublications.org/content/144/4/e20192528
- Common Childhood Disorders Matrix

Begin Code: 20210310APA

Background Information

Poll: How many of your clients are currently taking medication?

Poll: How many of your clients are taking medication for (diagnosis)?

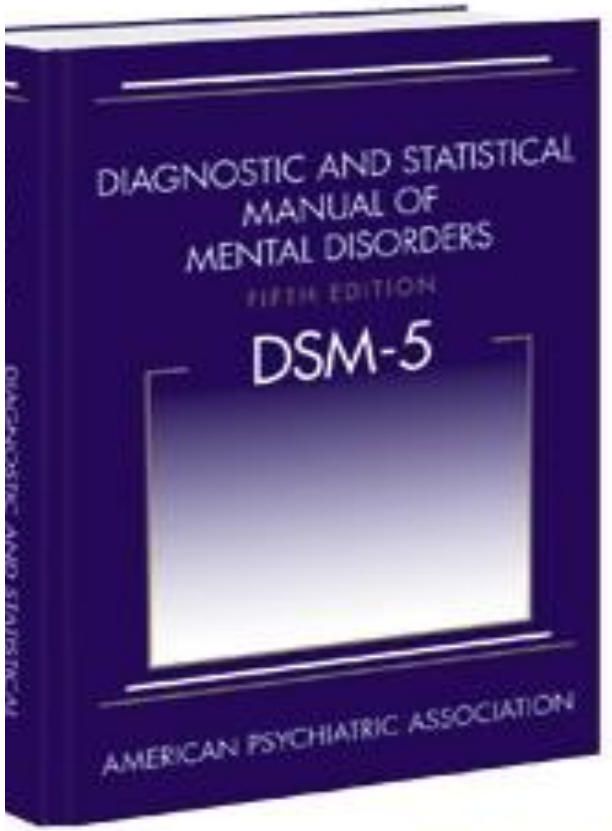
- Autism Spectrum Disorders
- Anxiety Disorders
- Depression
- ADHD

Diagnostic and Statistical Manual of Mental Disorder (DSM)

- Developed by the American Psychiatric Association after WWII
- Tool to classify mental disorders and improve communication
- Harmonized with International Classification of Diseases (ICD) by World Health Organization
- ICD-10: official coding system for service reimbursement
- DSM - Fifth Edition, published in 2013
- Guidelines for diagnosis that could inform treatment and management decisions

Diagnostic and Statistical Manual of Mental Disorder, Fifth Edition (DSM-5)

- Changes in DSM-5
- Organized on developmental and lifespan consideration
  - Section II starts with Neurodevelopmental Disorders, Neurocognitive to Other disorders
- Enhancement in diagnostic criteria
- Non-axial to Dimensional approach
- Other Specified and Unspecified Disorders
- V codes and Z codes



Introduction: Use of Medication to treat Childhood Disorders

1. What do we know about medications and children.
   a. Think about your reaction to use of medications to treat a child with:
      i. Pneumonia
      ii. Strep throat
      iii. Cancer
      iv. Diabetes
      v. Depression
      vi. Anxiety
   b. Think about why your reaction is different dependent on the diagnosis of the child
      i. Acute vs chronic illness
      ii. Social stigma
      iii. Misunderstanding of behavior as a flaw rather than symptom of a medical condition

Different Psychotropic Medication Categories Used in Pediatrics

- **Antidepressants:** Depression disorders
- **Anti-anxiety:** Anxiety disorders including generalized, social, performance, and separation anxiety
- **Stimulant medications:** Attention deficit disorder with Hyperactivity and Impulsivity (ADHD)
- **Mood stabilizers:** Intermittent explosive disorder, bipolar disorders, aggressive behavior, depression with anxiety
- **OCD:** Obsessive compulsive disorders
- **Autism Spectrum Disorders:** Treatment for underlying symptoms including anxiety, ADHD, aggression
- **Childhood Trauma:** PTSD and other stress disorders

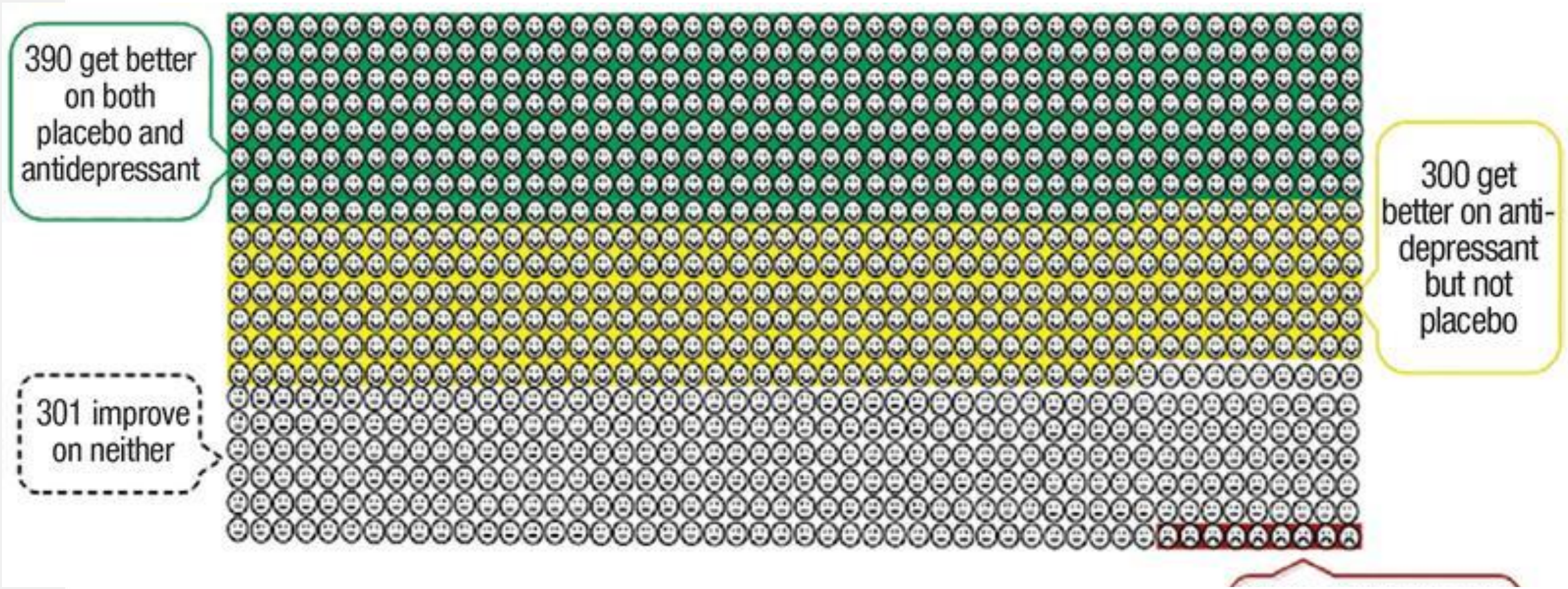
Different Psychotropic Medication Categories Used in Pediatrics

Antidepressants Approved for Treatment of Major Depression Disorder in Children

Medication	Age of Approval	Dosage Range	Comments
Escitalopram (Lexapro)	12 years	10-20 mg per day	Dose increased every 3 weeks
Fluoxetine (Prozac)	8 years	10-20 mg per day (note. Dose can be increased to 60 mg per day; it is recommended to split higher doses into twice day dosing)	Lower weight children should not be given over 10 mg per day
Bupropion (Wellbutrin)	12 years	50 to 300 mg per day dependent on age and weight	Used in clinical trials to children as young as 8 years of age. Decreases seizure threshold.

Note. Other antidepressants are used, but not FDA approved for depression, such as Citalopram, Sertraline, and Duloxetine.

Research on Efficacy of Pediatric Medication



Side Effects and Cautions

- Behavioral Activation Syndrome
  - Increased activation, increased energy, insomnia, and irritability.
  - More common in children with co-occurring ADHD or Anxiety
  - Many be an indicator of bipolar disorder.
- Serotonin Syndrome
  - Confusion, sweating, diarrhea, hypertension, hyperthermia, and tachycardia to seizures and death.
  - Risk is low but increases with polypharmacy with other serotonergic agents (i.e., migraine headache medications, and some pain medications, or cough suppressants (dextromethorphan). Risk also increases with recreational use of MDMA (ecstasy).

Side Effects and Cautions (Continued)

- Suicidal Ideation
  1. Risk less than 1% in over 25 studies. No completed suicides.
  2. Note. Suicide attempts and completions increased 14% after Black Box warning added to all antidepressants.
  3. General consensus is that benefit outweighs the risk.
- Other Side Effects: GI symptoms.

Categories of Medications Used to Treat Mental Health Conditions in Childhood

Anxiety:

Medication	Age of Approval	Dosage Range	Comments
Duloxetine (Cymbalta)	7 years	30-120 mg per day	FDA Approval for Anxiety, but used for Depression

Note. Other SSRI and SNRIs also used for treatment of Anxiety, but used off label, including Sertraline, Citalopram, and Escitalopram.

Categories of Medications Used to Treat Mental Health Conditions in Childhood

Obsessive Compulsive Disorder

Medication	Age Range	Dosage Range	Comments
Clomipramine	10 years	25 to 200 mg per day dependent on age and weight	Dose can be divided into one or two doses per day. Have to monitor blood levels; monitor for cardiac arrhythmias
Fluoxetine (Prozac)	7 years	10 to 60 mg per day	Higher doses than typically used with depression
Fluvoxamine (Luvox)	12 years	25 to 300 mg per day	Can be divided into two doses for larger doses

Categories of Medications Used to Treat Mental Health Conditions in Childhood

Attention Deficit Disorder and Hyperactivity and Impulsivity

Medications	Age Range	Dose Range	Comments
Methylphenidate (Ritalin, Concerta, Jornay)	6 years	5 to 60 mg per day	Comes in immediate release, extended release with morning and evening dosing. Effects last 4 to 16 hours.
Dexmethylphenidate (Focalin)	6 years	5 to 40 mg per day	Comes in immediate release, extended release with morning dosing. Effects last 4 to 8-12 hours
Dexamphetamine (Adderall)	6 years	5 to 60 mg per day	Comes in immediate release, extended release with morning dosing. Effects last 4 to 8-12 hours
Lisdexamfetamine (Vyvanse)	6 years	1- to 70 mg per day	Extended release; last 10-12 hours
Atomoxetine (Strattera)	6 years	10 to 80 mg per day	SNRI- works similar to antidepressants- takes 2-3 weeks to know effectiveness
Bupropion (Wellbutrin)	12 years	50 to 300 mg	Comes in sustained and extended release. Watch for seizure threshold.

Categories of Medications Used to Treat Mental Health Conditions in Childhood

Mood Disorder and Intermittent Explosive Disorder

Medication	Age Range	Dose Range	Comments
Aripiprazole (Abilify)	6-17 years	2-10 mg daily (can dose up to 30 mg per day)	Monitor for metabolic syndrome
Risperidone (Risperdal)	5-17 years	0.25 to 3 mg daily	Approved for treatment of irritability in children with ASD
Lurasidone (Latuda)	10-17 years	20-80 mg	Monitor for metabolic syndrome
Olanzapine/Fluoxetine combination	10-17 years	6/25-12/50	Monitor for metabolic syndrome
Quetiapine (Seroquel)	10-17 years	25- 400 mg	Monitor for metabolic syndrome; tiredness
Lithium	12-17 years	Dose to achieve target serum levels of .8-1.2	Lithium toxicity, kidney damage, weight gain
Lamotrigine (Lamictal)	2-17 years	25 -400 mg carefully titrated	Stevens-Johnson Syndrome

“Church Pew” Analogy for Decision Making

Making decisions regarding the use of medication is analogous to selecting where to sit in church.

Example: Child is diagnosed with an externalizing disorder.

- Understand the diagnosis. Which “pew” is appropriate?
  - Anxiety Disorder?
  - Depression?
  - Affective Disorder?

  Once that has been determined...
- Which “pew” do you go to next?
  - Stimulants?
  - Anxiolytic?
  - Antipsychotic?
  - Anticonvulsant?

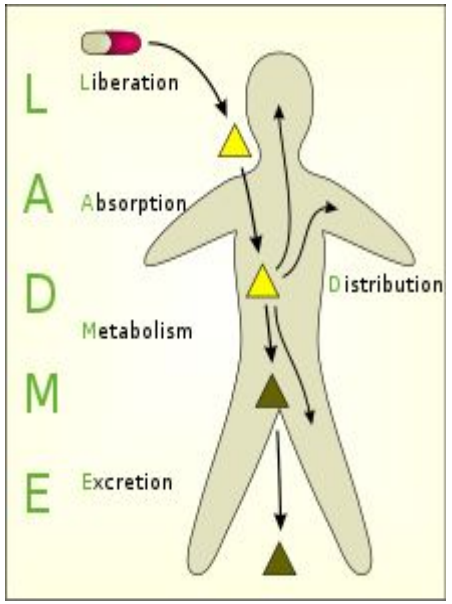
“Church Pew” Analogy for Decision Making (Cont’d)

- Symptoms that are in the background
  - Psychologists can often help the provider
    - Describing target behaviors to help the provider hone in on the best medication to choose

Psychopharmacology Key Points: How Drugs Work

Pharmacokinetics: How medications move throughout the body: Liberation, absorption, metabolism, distribution, and elimination

- Medications are typically absorbed in the GI tract, then passed through the liver for metabolism (first pass)
- Liver enzymes break down the medication to usable form, and eventually to ineffective form (think of alcohol)
- Most medications, after metabolism by the liver, are eliminated by the kidneys

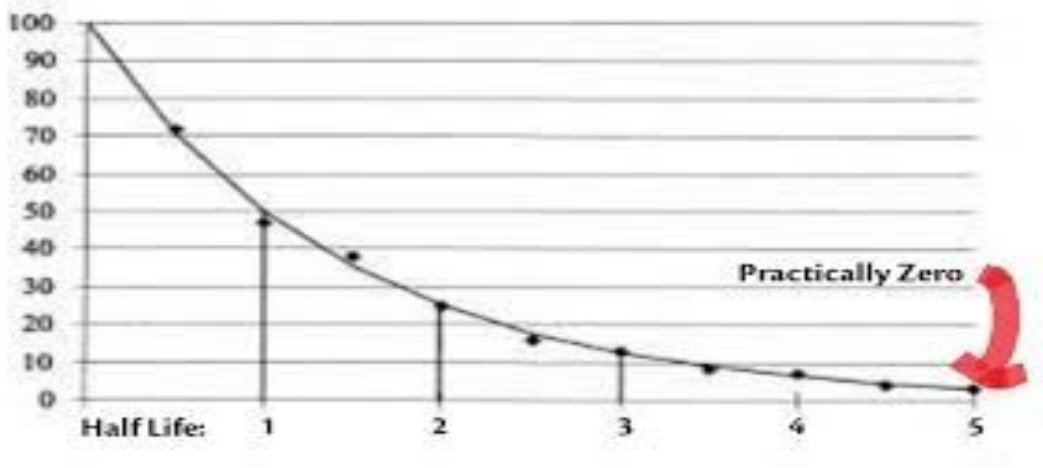


Pharmacodynamics: The body's response to the drug

- Agonists: Increase body's response
- Antagonist: Block body's response
- Other effects: Alter receptor site response, alter metabolism, decrease antioxidants, change cell reproduction or mutation,

Duration of Medication

- Impacted by food, interaction with other medications, metabolism, health, PH changes, elimination rate, genetics.
- Half-life: The time it takes for half of the medication to be metabolized and no longer effective
- Half-life impacted by absorption, dose, liver function, and elimination rate



Medications for Children and Adults

Children cannot metabolize many adult medications

- For example: Children under 10 years of age cannot metabolize Quetiapine due to immature liver metabolism

Childhood deaths or serious complications due to medications occur less often than with adults

- Careful prescribing
- Fewer children take multiple medications from multiple categories

Common Childhood Disorders and Treatment Plans

Diagnosis	Counseling	Medication	Behavioral Approaches	Other
Depression	Play, music, animal, CBT, Lifestyle	Antidepressants	Positive rewards and praise for positive self-talk, reframing, etc.	Educational accommodations (i.e., 504 Plan, IEP): Extended deadlines
Anxiety disorders	CBT, exposure therapy, story telling	Antidepressants	Positive reinforcement for graduated exposure and success	Educational accommodations(i.e., 504 Plan, IEP): Quiet space for schoolwork, adapted presentations
ADHD	CBT, education, lifestyle changes, social skills training	Stimulants	Positive reinforcement for sustained attention, stopping impulsivity, ABA	Educational accommodations (i.e., 504 Plan, IEP): Adapted assignments, extended deadlines, fidgets, quiet space
Mood, ASD, Explosive	Play, modeling, social skills, regulation skills	Mood stabilizers	ABA	Educational accommodations (i.e., 504 Plan, IEP)

Diagnosis and Assessment

1. Who conducts diagnosis
2. Who is best qualified to conduct diagnosis
3. Common instruments (Note. This is not an all inclusive list)
   - Wechsler Intelligence Scale for Children
   - Conner's Comprehensive Behavioral Rating Scale
   - Behavior Rating Inventory of Executive Function (BRIEF)
   - Woodcock Johnson Test for Academic Skills
   - Childhood Autism Rating Scale (CARS)
   - Autism Diagnostic Observation Schedule (ADO-S)
4. Monitoring: Interview, observation across settings, repeat assessment to measure growth
5. Medication adjustment: Weekly until stable, then monthly for 6 months, then quarterly.
   - Monitor effects, side effects, interactions, and growth in skills
6. Monitoring: Weekly until stable, then monthly for 6 months, then quarterly (dependent on professional role)

Multidisciplinary Treatment Team: Roles and Responsibilities

Title / Discipline	Roles and Responsibilities
Psychiatrist/Developmental Behavioral Pediatrician/ PNP-PMHS	Primarily diagnosis, medication management, monitoring of effectiveness of medications and side effects.
Psychologist	Assessment of behavior and academic/developmental skills, diagnosis, development of treatment plan and strategies, ongoing counseling and evaluation.
Pediatrician	Medical home for well child checks, immunizations, monitoring for medication interactions, family education.
Behavior Analyst	Development and evaluation of behavioral interventions, parent education and support.
Speech Therapist	Development and evaluation of speech therapy interventions, parent education and support.
Educator	Implementation of appropriate educational plan in the least restrictive environment.
Parent	Team leaders; carry out agreed upon treatment plan, provide evaluation information, often put in the role of case managers.

Multidisciplinary Treatment Team: Service Delivery

PARENTS

PEDIATRICIAN

Psychologists, Developmental Behavioral Pediatricians

Conduct diagnostic evaluations

Cognitive assessment (IQ testing), Neurological assessments, (Memory, Language, Attention, Visual, Motor)

Diagnostic criteria
=
Diagnosis & recommendations

Dx: Autism Spectrum Disorder

Behavior Analyst

Speech OT School
Genetics DBP/ Psychiatrist

Dx: Anxiety/Depression

Psychologist

School

Psychiatrist

Research on Adherence and Outcome

- What factors predict adherence?
  - Severity of the disease
  - Treatment characteristics
  - Personal characteristics
  - Environmental factors

Research on Adherence and Outcomes (Cont'd)

- Not everyone adheres
  - Approximately 125,000 people die each year because they are non adherence to recommended treatment plans.
  - Nonadherence to medication regimens is 24.8%
    - There are differences among chronic conditions in adherence rates

The Importance of Perception on Adherence

- People's *perception* of the severity of their disease is more predictive of adherence than *objective* severity of disease

Barriers to Adherence

- What are the barriers to adherence?
  - Cost
  - Patients see the regimen as being too difficult or time-consuming
  - Patients treat regimen as advice rather than “orders”
  - Patients stop taking medication when symptoms disappear

Increasing Adherence

- Address fears and concerns
- Offer evidence-based information on use of medications in children
- Start low and go slow
- Start with non-medical interventions first
- Support groups and discussions with other parents and children can help
- Simplify treatment plan (i.e., if a once per day dosing is available, choose that rather than multiple dosing throughout the day).

Importance of Treatment

- Characteristics of the treatment are implicated in adherence:
  - Side effects of medication - perceived severe side effects decreases adherence
    - Monitor side effects as possible cause of change in behavior
  - Complexity of the treatment - more complex treatment decreases adherence

Treatment Duration

- For first episode of depression: Treat for 6-8 months.
- For subsequent episodes of depression: Treat for 12 months. Cut dose in half and remeasure in 3 months. If still in remission, wean over 3 months.
- For ADHD: monitoring symptoms and assessing need for medication past adolescents.
- For explosive outbursts and aggressive behavior, assess need for medication annually.
- **Caution**: Never stop medication abruptly, or without planning dependent on the diagnosis, the duration of symptoms, and the medication or combination of medications used.

Before Starting Medication on Children

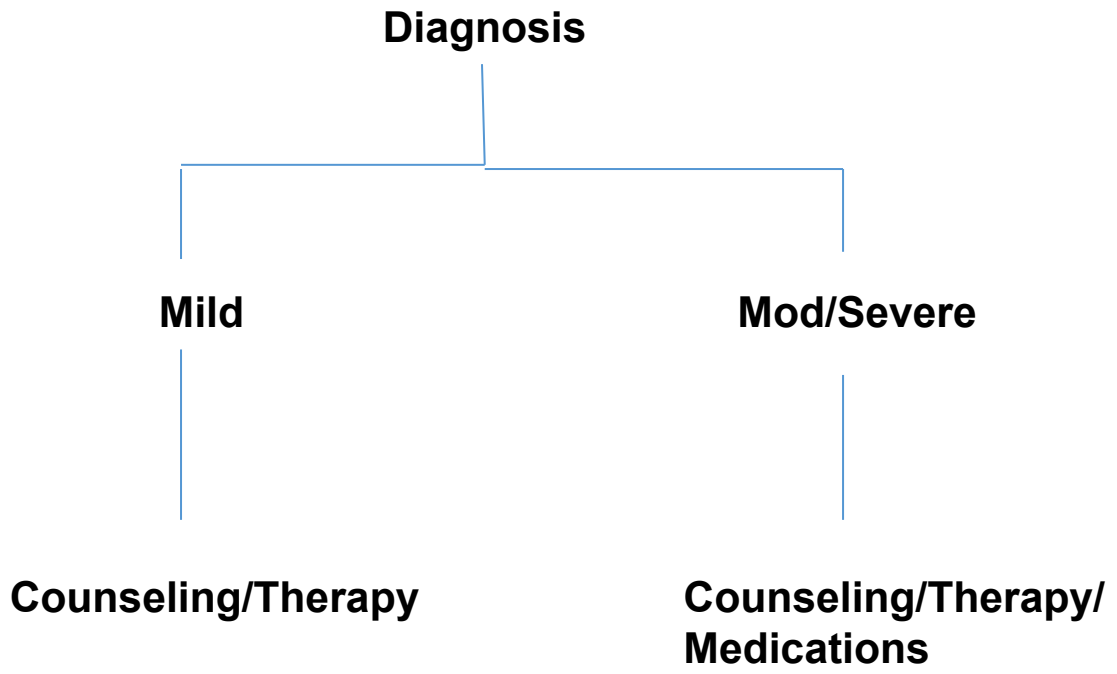
The Assessment and Key Consideration:

- Results of the assessment and the diagnosis or diagnoses.
- Target symptoms.
- Risks if medications are not used.
- Potential benefits if medications are used.
- Known risks, side effects, and/or Food and Drug Administration (FDA) warnings.
- Knowing whether the medication is being prescribed on-label or off-label (whether the medication has been approved for children and adolescents for the condition for which it is being prescribed).
- Alternative or additional treatments for the diagnosis or diagnoses.

Decision Making Process When Deciding on Specific Medications

- Stage of diagnosis: Early vs. Mid stage.
- Developmental stage and age of the child.
- What has already been tried, and the response to past medications.
- Family mental health history:
  - What other family members have tried,
  - Family member responses and side effects.
- Target symptoms:
  - Internalizing,
  - Externalizing,
  - Sleep disruptions,
  - Concurrent diagnoses (i.e., Anxiety and ADHD or Down's syndrome and anxiety).
- Cost and accessibility.
- Family's values and beliefs regarding medications.

Decision Making with Psychotropic Medications



If improvement does not occur, consider re-evaluating the diagnosis, adding medication, changing the dose of medications, changing the medication, augmenting medication with other medications or other treatments (i.e., alternative treatments). For severe and resistant cases, consider referral to specialty teams.

Taking Data. Using Data

- Who?
- What?
- Where?
- When?
- Why?
- Poll: What barriers have you faced when taking data?
  - Type of data collected
  - Benefits of sharing data collected
- Assessment tools, screening, observation, interview, questionnaires
    - e.g., Vanderbilt Assessment Scales, PHQ-9, SCARED

Monitoring Medications in Children

- Most medications take two to four weeks before full effectiveness can be measured (except stimulant medications).
- Many psychotropic medications impact appetite (either increasing or decreasing appetite): monitoring growth every month while on medications is important.
- Many medications can alter learning (i.e., stimulant medications can improve learning while some mood stabilizers can alter cognitive functioning, especially at higher doses). Monitoring of cognitive functioning and academic progress is important.
- Many medications can alter sleep patterns. Monitoring sleep initiation, maintenance, and terminal stages is important.
- Many children resist taking medications: Adherence is important
- Screening tools can help measure effectiveness:
  - Depression: PHQ-9 for adolescents, CDI for children over 8 years, Conners CBRS can be used for children as young as 6 years
  - ADHD: Conner's forms, Brown's Questionnaire, Vanderbilt questionnaires.
  - Anxiety: MASC and SCARED screening tools.

Medication Safety (Dos & Don’ts)

- Store medications in a safe place (high shelves if younger children are in the home)
- Lock up stimulant and pain medications.
- Keep medications in labeled pharmacy bottles; if child needs medication at school or a second home, have pharmacist divide medications for you.
- Never give a medication prescribed for one child to another family member or friend.
- Be careful of interactions between medications, over the counter medications, or other substances (i.e., alcohol, energy drinks, drugs, etc.).
- Never stop or change a dose of a medication abruptly or without discussing with health care provider. Each medication is different in duration of treatment and methods of weaning.

Summary

- Medications are used effectively to treat a variety of mental health conditions in childhood, with benefits outweighing the risks in most cases.
- Knowing how medications are absorbed, distributed, metabolized, and eliminated from the body helps understand the duration of the effectiveness of the medication and factors that can alter that duration.
- The first step in deciding whether a child needs a medication is after a thorough assessment and diagnosis.
- The decision-making process of which medication is needed is dependent on the child, the family, and the characteristics of the medication.
- Careful monitoring of the child taking medications will increase effectiveness, adherence, and avoidance of intolerable side effects.
- Medication safety is important to teach to all parents administering medication to their child.
- Myths can prevent a child from obtaining optimal care.

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Ronald Brown, PhD
Lyre Fribourg, PhD, BCBA-D
Diane Allen, BCBA (SL Clinician)
Samantha Hayes, OTS (Clinical Support)
Nicole Diana (President)
Michelle Capulong (Client Support Manager)
Sasho Gachev (Creative Director)