



Pathways to Professional Development

Building Foundations in Infant
and Early Childhood Mental Health

Psychiatric Medications in Young Children: Does It Make Sense to Try Them?

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Pathways to Professional Development



Pathways to Professional Development; Building Foundations in Infant and Early Childhood Mental Health was developed to build workforce competence and to prepare professionals working in the perinatal and birth to 5 periods

- 30 webinars focused on the foundations of Infant and Early Childhood Mental Health.
 - Provided live virtually
 - Recorded for viewing as LMS modules
- Diagnostic Classification of Mental Health And Developmental Disorders of Infancy and Early Childhood (DC:0-5) offered virtually.
- View all offerings here → <https://www.mcsilverta.org/special-initiatives/pathways-to-professional-development/>

The aim is to develop a well prepared and competent workforce trained to **identify** and address mental health concerns early, to **promote** awareness of mental health, to **prevent** long-term problems and to **intervene** to help children stay on developmental track.



Who we are



These trainings are funded by the New York State Office of Mental Health (OMH) and provided by the New York Center for Child Development (NYCCD) in collaboration with CTAC.

- **New York Center for Child Development** (NYCCD) has been a major provider of early childhood mental health services in New York with a long history of providing system-level expertise to inform policy and support the field of Early Childhood Mental Health through training and direct practice.
- **NYU McSilver Institute for Poverty Policy and Research** houses the Community and Managed Care Technical Assistance Centers (CTAC & MCTAC), and the Center for Workforce Excellence (CWE). These TA centers offer clinic, business, and system transformation supports statewide to all behavioral healthcare providers across NYS.

NYCCD and McSilver also run the **NYC Perinatal + Early Childhood Training and Technical Assistance Center (TTAC)** which offers ongoing training and technical assistance for those working during the perinatal period to age 5

<https://ttacny.org/>



Disclosures



Dr. Weis has no conflicts of interest to disclose

Very few psychiatric medications are FDA approved in young children – we'll cover that as we go



Learning Objectives



1. Participants, both clinicians and non-clinicians, will gain understanding of the underlying concerns and potential benefits related to psychiatric medications in young children.
2. Participants will be able to describe clinical situations where consideration of medication might be warranted.
3. Participants will expand on their ability to discuss a recommendation for medication evaluation with a family.
4. Participants, both clinicians and non-clinicians, will develop familiarity with some of the most common medications that might be prescribed for young children after evaluation.

Section 1

What is early childhood mental health?

And what does that have to do with medication?



ZERO TO THREE
Early connections last a lifetime



Early Childhood Mental Health is the developing capacity of the infant and young child

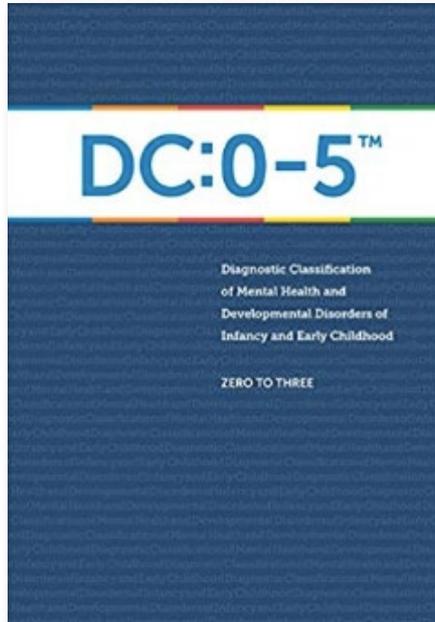
- to form close and secure relationships
- to experience, manage, and express a full range of emotions
- to explore the environment and learn

all in the context of family, community, and culture

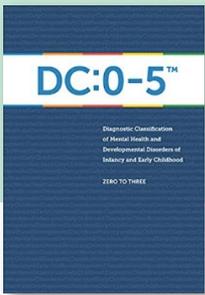
Emphasizes that mental health is formed through nurturing, consistent caregiving, which helps children regulate emotions and build foundational social-emotional skills.



Early Childhood Mental Health: Diagnostic Approach

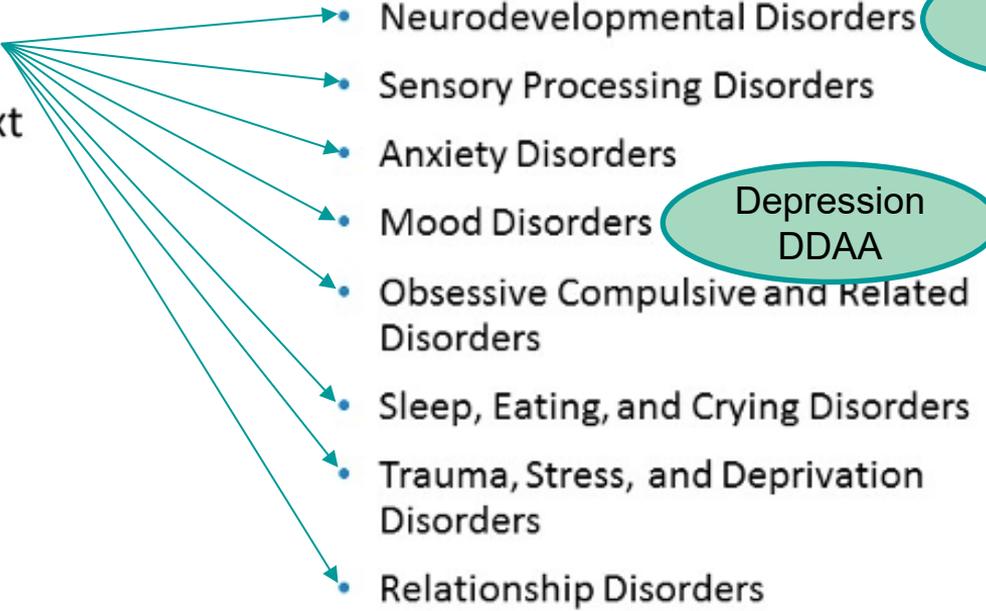


- System for social-emotional diagnoses in young children
- Focuses on incorporating developmental issues that may affect symptom presentation in young children
- Includes diagnostic considerations even for the youngest children



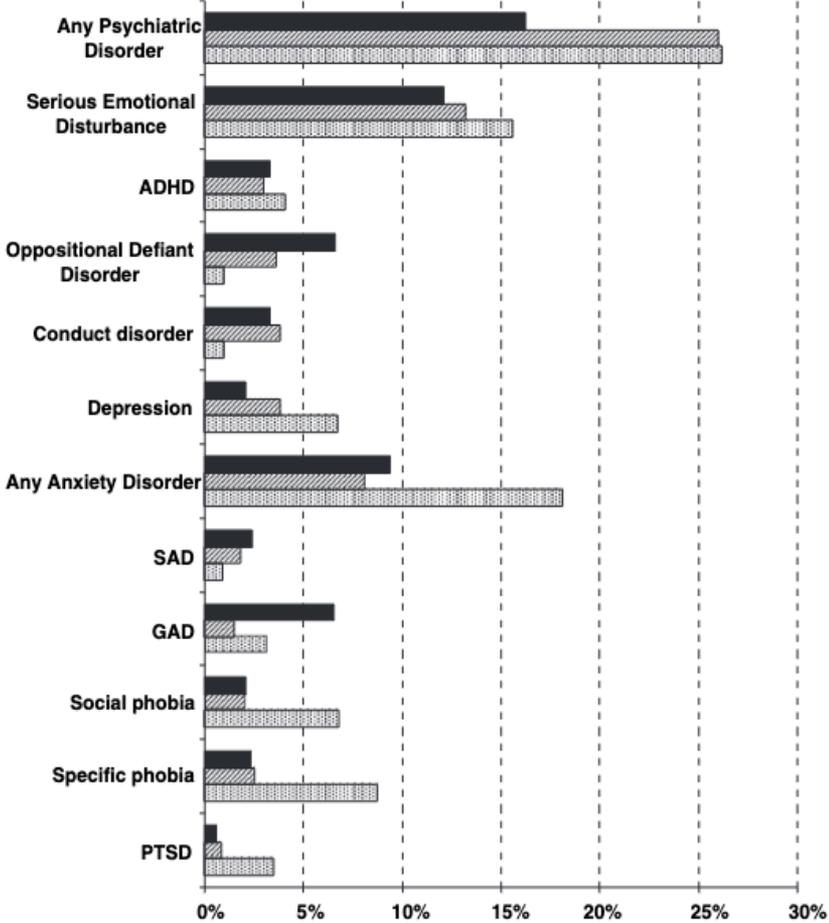
ADHD
ASD

- Axis I: Clinical Disorders
- Axis II: Relational Context
- Axis III: Physical Health Conditions and Considerations
- Axis IV: Psychosocial Stressors
- Axis V: Developmental Competence



Depression
DDAA

Diagnostic Prevalence



Adults
 Children ages 5-17
 Preschoolers ages 2-5

Figure 1 Prevalence of psychiatric disorders in preschoolers, children and adolescents, and adults. Data abstracted from: Angold, Egger, Erkanli, & Keeler, submitted; Costello, Egger, & Angold, 2005; Kessler, Chiu, Demler, & Walters, 2005b.

Egger & Angold 2006

Diagnostic Prevalence

- More recent study published in Morbidity and Mortality Weekly Report
- Data from National Survey of Children's Health 2016
 - National cross-sectional survey, web and paper response options
- Asked parents "Has your child ever been diagnosed by doctor or health care provider with any mental, behavioral, or developmental disorder?" (MBDD)
 - anxiety problems, depression, attention-deficit/hyperactivity disorder, behavioral or conduct problems, Tourette syndrome, autism spectrum disorder, learning disability, intellectual disability, developmental delay, or language problems

Cree *et al* 2018

Diagnostic Prevalence

Systematic Review – 35 studies
from US and other countries
Preschoolers in primary care
Aggregated data: 18.4% with
psychiatric diagnosis
Significant proportion still had
mental health problem at follow-
up 1-3 years later

Charach 2020

Goes with previous
slide: Yes to MBDD
17.4% age 2-8 years

Out of that 17.4%
18% were age 2-3
25% were age 4-5
57% were age 6-8

Cree *et al* 2018

Parental Perception

- Recent study examined whether parents are able to identify mental health needs in young children
 - Children evaluated for symptoms and impairment through PAPA (parent report)
 - Parents surveyed about their own
- 61.2% of children who met criteria for a diagnosis were not perceived by parent as having a mental health need
 - Those who were tended to have 19 or more symptoms and 4 or more impairments
 - Parents with moderate-high parental depressive symptoms were more likely to perceive child mental need

McGinnis 2022

Turning to treatment & prescribing stats

- Medicaid Coverage: followed a cohort of children born in a mid-Atlantic state from birth to age 7 or 8 (35,255 children - 92% of the Medicaid-insured newborns from 2007)
 - incidence of diagnosis 0.3% by age 1 up to 19.7% by age 8
 - Included learning disorder and ASD
 - prescribing increases with age – 1% at age 3, nearly 4% at age 5 – 10.2% overall
 - breaking down data
 - ADHD and LD most common for boys and girls, stimulants most common for both
 - girls more likely to be prescribed anxiolytics or hypnotics – especially benzodiazepines
 - antipsychotic use low, but only 15% of those with prescriptions had ASD (FDA)
 - non-Hispanic black children highest rate of ADHD diagnosis, but lowest rates of prescriptions
 - children in foster care and eligible for SSI receive prescriptions at higher rate, for longer periods, and for more than one medication at a time compared to income eligible
 - 12.2% received psychosocial services, foster and SSI more likely to receive

Pennap 2018

What about the Food and Drug Administration?

haloperidol (1976)	age 3-12	Tourette's, hyperactive behavior after failure to respond to non-antipsychotic and psychotherapy, psychotic disorder, schizophrenia
dextroamphetamine IR, amphetamine mixed salts IR	age 3 and older	ADHD
chlorpromazine (1956)	age 6 months and up	behavioral problems and hyperactivity
risperidone (2006 this indication)	age 5-16	irritability associated with autism
prochlorperazine (1956)	children >2 years and >20 pounds	schizophrenia and severe nausea/vomiting
hydroxyzine (1956)	all ages	anxiety, sedative before surgery, and itchy skin

Turning to treatment & prescribing stats

- Private Health Insurance Coverage: used a large database to look at session claims, prescriptions, and diagnoses
 - 30% of US population with private health insurance (includes 1,987,759 children 0-5 years)
 - 7% had any mental health diagnosis, 4% ADHD (most common diagnosis assigned)
 - of those, 31% received no assessment/psychotherapy/medication
 - but 12% had a prescription filled for a psychotropic medication
 - 1% had any psychotherapy and <1% had a documented mental health assessment

Ali 2018

Some basic principles if considering medication

- What are you treating?
 - Symptoms or diagnosis?
- What should happen before considering medication?
- What are the risks versus benefits of medication?
- What amount of time should the child take medication?

American Academy of Child and Adolescent Psychiatry Guidance (2007)

Recommend psychotropic medication in preschoolers only

- 1) After a trial of evidence-based psychosocial treatment has failed OR is inaccessible
- 2) In instances of moderate to severe symptoms and functional impairment when there is a high risk of injury to self/others or worsening family dysfunction

Gleason 2007

American Academy of Child and Adolescent Psychiatry Guidance (2007)

- Algorithms for treatment for common disorders
 - Based in available evidence
 - Stages of assessment and treatment
 - Thorough diagnostic assessment
 - Implementation of evidence-based psychosocial treatment
 - Treatment of parental psychopathology if it is impacting childhood symptoms
 - Initiation of medication treatment for a 6-month trial with consistent monitoring **IF** prior interventions did not alleviate symptoms

Gleason 2007

Risk/benefit concept



Treatment	Risk	Benefit
Aspirin	Stomach upset, increased bleeding	Decreased pain and inflammation
fluoxetine (Prozac)	Stomach upset, slight risk of increased suicidal thinking	Significant decrease in depression/ anxiety symptoms
Cognitive Behavioral Therapy	Weekly sessions mean missing out on other activities, sometimes symptoms get worse before better	Significant decrease in depression/ anxiety symptoms

Evolution of a concept – risk/risk/benefit & application to young children

Problem (& proposed treatment)	Risks of untreated problems	Risks	Benefits
Short-term problem	Short-term	Short-term	Short-term
Long-term problem?	Long-term?	Long-term?	Long-term?

How do you know if it's a side effect?

- In FDA studies for medications, any reported negative event or symptom occurring while taking the medication is required to be reported
 - Sometimes random events get associated with the medication
- In reality, there should be patterns with side effects
 - Timeline of new or increased event/symptom should match either starting the medication (at least within a few days) or increasing the dose of the medication
 - Side effects unlikely to fluctuate dramatically day-to-day if patient is taking medication consistently
 - Side effect should disappear if stop medication
- More meds, more chance of side effects!



General approach to psychopharmacology in young kids

- Dosing for children and adolescents sometimes needs to be adjusted - more so for younger children than adolescents
 - The “start low and go slow” rule often applies
 - Try to minimize dose to decrease risk
 - Conversely, young children may be rapid metabolizers due to fantastic liver and kidney function
 - May need to increase dose to get benefit

Plan to re-evaluate medications

- When starting meds
 - Pick specific target symptoms to monitor
 - Is the medicine helping? Are there specific scales to use?
 - Have a timeline to re-evaluating effectiveness
 - Is the medicine still helping?
 - Consider trial off medication
 - Have symptoms changed?
 - Is it possible to discontinue the medication?

Section 2

Case examples



Moses



Moses is a 37 month-old male living with his mother and father.

- Language delay and pediatrician suggested evaluation. Motor milestones are on target overall and he does not seem significantly cognitively delayed.
- No significant changes in his routine or stressors/trauma.
- Mother concerned about frequent tantrums and aggression towards her and father.
- Up very late at night, wakes up very early in the morning. Mother has tried to limit day-time napping, but he does tend to take a nap for three to four hours each afternoon, and if she wakes him, he is extremely irritable.
- She would like to have him in daycare but is worried about enrolling him because of the tantrums and aggression.

Neveah



Neveah is a 43 month-old female.

- Neveah's mother and father recently re-united after spending a few months apart because they had been having a lot of arguments. Neveah's mother is now pregnant, about midway through the pregnancy. They are concerned about Neveah adjusting to having a sibling.
- Neveah's preschool teachers have been noticing that she is having a hard time staying in circle time and drifts from one activity to another more than the other children in the classroom.
- Neveah met all her milestones on time and has a more advanced vocabulary than many children her age.
- Neveah has been crying more often at drop-off than she did when she started daycare at around 24 months and when she transitioned to preschool a few months ago. She also starts crying at naptime.
- Family history: Father was in foster care as a child and diagnosed with ADHD and depression as a child. Mother has struggled with panic attacks and generalized anxiety.

Angelo



Angelo is 50 months old and lives with his mother.

- His father is involved, but mother and father have not lived with one another, and mother has been the primary custodian.
- Mother struggles with Angelo's behavior. He has difficulty following directions from her and will often become upset in public at which point he sometimes runs away from her.
- Father sometimes takes Angelo on vacations with his family but hasn't usually dealt with behavior problems with him and thinks mother doesn't know how to "handle him."
- Angelo recently started pre-K. He hadn't been in school before now and is definitely in the adjustment phase. His teachers say they are still getting to know him, so aren't sure what patterns they are seeing yet.

Section 3

How would I suggest a medication evaluation to a parent or guardian?

Important points

If you are a mental health clinician working with a child:

- What have you and parent/guardian set up as treatment goals? How are these goals progressing? Would it be worth getting another opinion about treatment options?
- Have other issues emerged or become clear that weren't initial treatment goals? Are there treatment adjustments you can make to address these? Do you want to explore options?

Important points

If you are working with a child in some other way:

- Has the parent/guardian brought it up?
- Are they seeking your opinion?
- What do they think you can offer?

Managing Misconceptions

“ Medications are addictive - I will become dependent on them”

“ Medications are mind-altering drugs”

“ Medications are ‘happy pills’ or ‘will make me a zombie’”

“ Once I get better, I won’t need medication any more”

“ I only take medication when I have symptoms”

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Graphic From AIMS Center presentation “Treating Depression in Primary Care” (see References)

Important points

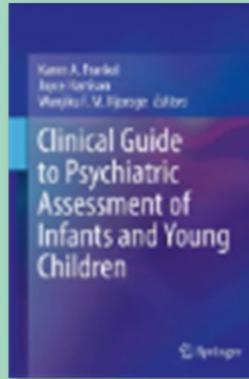
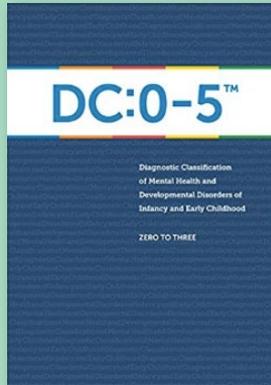
- *There is no pressure to decide now – this can be an ongoing discussion and even if you decide to pursue evaluation, it's just an exploration.*
- *Be prepared to offer your thoughts from a neutral perspective (which means getting clear on any feelings and thoughts you might have).*
 - *Give them the space to talk about their thoughts without judgment.*
- *Encourage parent/guardian to consider whether there are others they also might want to talk with about this.*

Section 4

What happens in a medication evaluation?

First and foremost – a comprehensive evaluation

- Not wildly different from any mental health evaluation
- Some good resources:



Frankel 2019

Chapter 4 & 5 – Observational Assessment of the Dyad and Observational Assessment of the Young Child
Chapter 7 – Rating Scales for Social-Emotional Behavior and Development
Chapter 8 - Diagnosis in young children: The use of the DC:0-5™ Diagnostic Classification of Mental Health and Developmental Disorders in Infancy and Early Childhood
Chapter 9 – Psychopharmacologic Considerations in Early Childhood

Specific points that may be especially important

- Trajectory of symptoms
 - Timeline is really important + correlation with other parts of history
 - Also, where do symptoms occur?
- Medical history
 - Could medical problems currently be impacting mental health symptoms?
 - Could any medications the child is currently taking be contributing to symptoms?
 - Are there medical issues that might affect choice of medication?
- Developmental history
 - Is there any possibility of currently undiagnosed developmental issues that need to be taken into account?
- Prenatal history?
 - Lots of questions, not enough answers
 - Substances, medications, stress?
- Family history
 - Especially has a first degree relative with similar issues done well on a specific medication?

Communication with prescribers

- Importance of ongoing communication
- Prescribers (and therapists) are generally very interested in feedback from people who are interacting with kids they treat
- What might help you effectively communicate with the prescriber?
 - Pick a designated team member who can gather info from all sources
 - Consider communicating in writing when it's hard to coordinate phone calls
 - Standardized questionnaires and rating scales
- Support parents
 - Encourage parents to talk to doctor honestly
 - Are they thinking about stopping meds or changing doses?
 - Does the parent have worries about the medicine that the doctor didn't cover in the initial explanations?
 - Encourage parents to write their questions down ahead of time!

Section 5

Which medications might I see a child prescribed?

What should I know about these medications?

Stimulants



Office of
Mental Health



The PATS Study

- Preschool ADHD Treatment Study
- Funded by NIMH, randomized controlled trial
- Children age 36-65 months
- Phased study
 - Parent management training - If symptoms were markedly improved after parent training, patient did not continue in study
- Dose range methylphenidate (MPH) 1.25-7.5 mg 3 X per day (TDD 3.75 mg – 22.5 mg)
 - Parents and teachers completed rating scales at each dose
- In phase 6, 114 children, half MPH at optimal dose/half placebo
 - Trend toward improvement of ADHD
 - Teachers noted improvement in social competence in MPH group
 - MPH group slightly more moody
 - Results probably skewed by the fact that 45% of the placebo group dropped out during phase 6 because of behavioral deterioration when off MPH

PATS STUDY PHASE	Duration
Phase 1: Screening/Enrollment	Time Varied
Phase 2: Parent Training	10 Weeks
Phase 3: Baseline	2-4 Weeks
Phase 4: Open Label Safety Lead-In	1 Week
Phase 5: Crossover Titration	5 Weeks
Phase 6: Parallel Phase	4 Weeks
Phase 7: Open-Label Maintenance	10 Months
Phase 8: Discontinuation	6 Weeks

Fig. 1 Preschool ADHD Treatment Study (PATS) phases and duration of each phase.

The PATS Study

- During phase 7: 10 month long open-label continuation trial (n=140)
 - Maintained improvements that were seen during prior MPH treatment
 - 11% had adverse effects that caused discontinuation at some point
 - Emotionality/irritability was most common reason for discontinuation
 - Appetite loss also relatively common
- 6 year follow-up
 - 89% of the kids still met criteria for ADHD (so diagnosis was pretty reliable)
 - 70.9% of the children were taking ADHD indicated medications (stimulant, atomoxetine, or alpha2-agonist)
 - 65.3% on stimulant

Summary –

- ADHD could be accurately diagnosed in preschool children,
- There were differences in side effects compared to older children but many children were able to tolerate the medication,
- There were improvements in ADHD symptoms and associated functional outcomes (like social competence) but not as robust as in older children

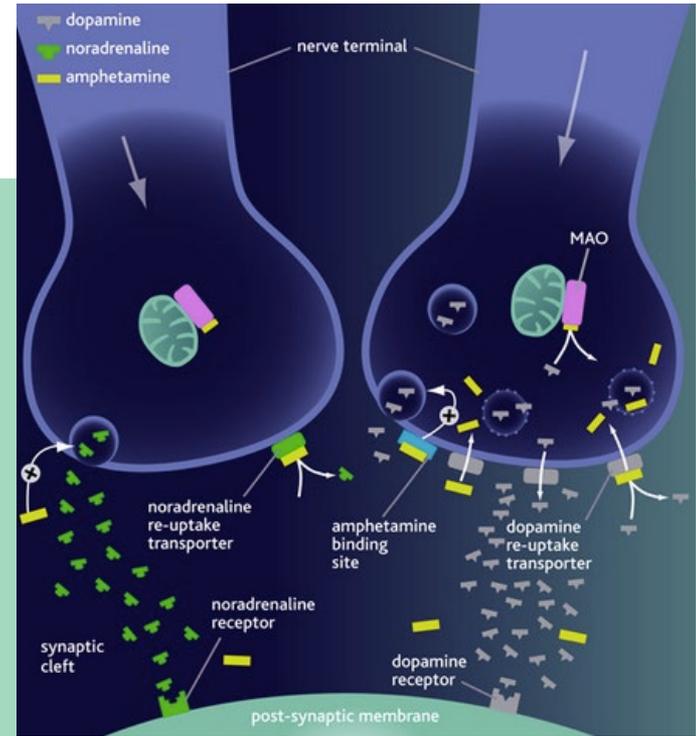
Greenhill 2006, Vitiello 2015

Neurons



The Two Stimulants?

- Methylphenidate vs. Amphetamine
 - Methylphenidate blocks the reuptake of DA and NE but has little effect on presynaptic release of dopamine
 - Amphetamine blocks reuptake of DA and NE & increases release of DA and NE
- Enhancement of dopamine and norepinephrine in the dorsolateral prefrontal cortex may improve concentration, attention, executive functioning and wakefulness
- Enhancement of dopamine and norepinephrine in the basal ganglia may improve hyperactivity
- Enhancement of dopamine and norepinephrine in the medial prefrontal cortex and hypothalamus may improve depressive symptoms, fatigue and sleepiness.

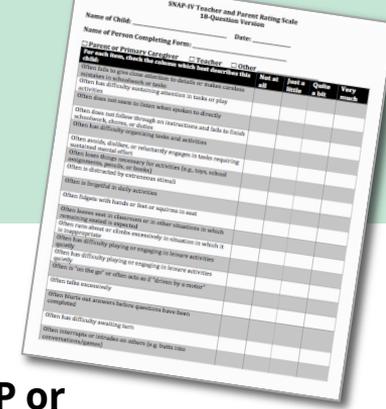


Stimulant dosing

- Stimulants come in short- and long-acting versions
 - Short acting have 2-4 hour duration of action
 - Long acting have 8-12 hour duration of action
 - Liquid, chewable, and patches – multiple dosing options
- Sometimes long- and short-acting meds are “layered”
- Because the delivery of the medicine varies by formulation, some kids do better on one versus another



Dosing of Stimulants



SNAP-IV Teacher and Parent Rating Scale
18-Question Version

Name of Child: _____ Date: _____

Name of Person Completing Form: _____

Parent or Primary Caregiver: Teacher Other

For each item, check the answer which best describes the child.

Item	Not at all	Some	Quite a bit	Very much
Often fails to give attention to details or is careless in schoolwork or at home				
Often has difficulty sustaining attention in tasks or play activities				
Often has trouble to listen when spoken to directly (schoolwork, at home, or during play)				
Often does not follow through on instructions and fails to finish schoolwork, at home, or during play				
Often has difficulty organizing tasks and activities				
Often avoids, dislikes, or reluctantly engages in tasks requiring sustained mental effort (e.g., homework, reading)				
Often loses things necessary for activities (e.g., toys, school supplies, books, or books)				
Often is distracted by extraneous stimuli				
Often is forgetful in daily activities				
Often fidgets with hands or feet or squirms in seat				
Often leaves seat in classroom or in other situations in which it is inappropriate				
Often runs about or climbs excessively in situations in which it is inappropriate				
Often has difficulty playing or engaging in leisure activities				
Often is "on the go" or often acts as if "driven by a motor"				
Often talks excessively				
Often blurts out answers before questions have been completed				
Often has difficulty awaiting turns				
Often interrupts or intrudes on others (e.g., talks out of turn, interrupts others)				

- Start **low** and go sort of **slow**
 - Too often, kids are kept on ineffective doses for way too long – see below
 - Use of standardized rating scales like the **Preschool ADHD Checklist, SNAP or Vanderbilt** can significantly improve titration practices
- Can see effects almost immediately – average a few days to assess therapeutic benefit
- If no improvement or only partial improvement after 3-7 days and tolerating well:
 - Increase dose
 - If current medication is already maximized, consider changing medication
 - If current medication is not well tolerated, consider changing medication
- Many children take medication “holidays”
 - For instance, might skip non-school days
 - Allows for chance to catch up on calories for those with appetite suppression and catch up on growth if needed (especially over the summer)



Stimulant side effects

- Common (10-50%): nausea, stomach upset, decreased appetite, insomnia, headache
 - Some will decrease after child takes for a few weeks
 - Practical management – eat before taking, last dose several hours before bedtime
- Uncommon: motor tics (resolve when stop med), rebound hyperactivity, dysphoria, irritability, hallucinations, “zombie”
- Cardiac and neurologic: If child has underlying cardiac or serious neurological issues such as seizure disorder, it’s important to consult with pediatrician/specialist
- Growth: Studies are mixed and very difficult to do, but if there is an effect, likely very slight
- Rebound: As stimulants wear off, an increase of symptoms sometimes even above the baseline symptoms

Other studies about medication for ADHD in young children

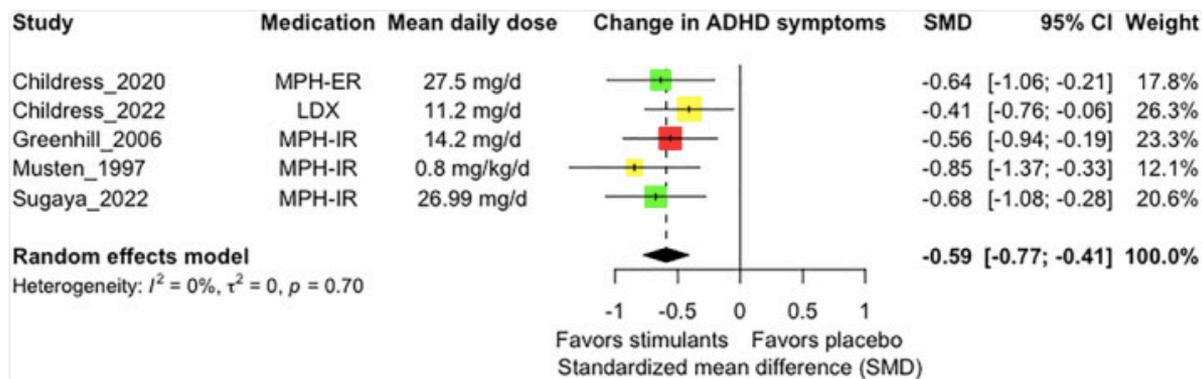
- Wigal 2007 – methylphenidate (MPH) cleared at slower rate in preschool-aged child
 - Also part of PATS trial
- Ghuman 2009 – MPH IR vs placebo – reduction in symptoms
- Arabgol 2015 – risperidone vs MPH IR age 3-6 – significant treatment effect for both groups
- Safavi 2016 – MPH IR vs MPH IR+risperidone age 3-6 – significant response both groups, combined treatment had very slightly less anorexia, insomnia vs daytime drowsiness
- Childress 2020 – age 4-5 methylphenidate XR (Aptensio) – improved symptoms of ADHD
 - Adjei 2020 – age 4-5 methylphenidate XR (Aptensio) – higher peak concentration but otherwise very similar pharmacokinetics
- Harstad 2021 – age 54-62 months retrospective stimulant vs alpha-2 agonist – both improved, different SEs
- Childress 2022 – age 4-5 lisdexamfetamine vs placebo – improvement in symptoms
- Sugaya 2022 – age 3.9-5.9 methylphenidate vs placebo – improvement in symptoms

-
- Ghuman 2009 – atomoxetine age 3-5 open label – significant improvement, tolerated
 - Kratochvil 2011 – atomoxetine vs placebo age 5-6 – significant improvement with medication
 - Safavi 2016 – aripiprazole VS risperidone age 3-6 ADHD+DBD – improvements in both groups
 - Scahill 2015 – guanfacine vs placebo age 5-14 significant improvement in hyperactivity symptoms

Wigal 2020, Sugaya 2023

Other studies about medication for ADHD in young children

FIGURE 2.



Wigal 2020, Sugaya 2023

Non-Stimulant Treatment of ADHD: atomoxetine

- **atomoxetine (brand name Strattera):**
 - Selective NE reuptake inhibitor
 - Advantages: low abuse potential, less insomnia/growth problems
 - Disadvantages: delayed onset of effect (2-4 wks), lower efficacy than stimulants
 - Dose based on weight: 0.5mg/kg/day, up to 1.2mg/kg/day as tolerated
 - Adverse effects:
 - nausea, stomach pain, moodiness, increased heart rate
 - black box – suicidal ideation (not suicidal behavior)
 - maybe 0.37% of kids compared to not taking atomoxetine (0%)
 - but large recent studies have not found this association

Bangs 2008, Bangs 2014, Linden 2016, Davies 2017

Alpha-2 Agonists



Office of
Mental Health



Non-Stimulant Treatment of ADHD: alpha-2 agonists

- Two medications: **clonidine & guanfacine**
- For blood pressure originally ... works in the central nervous system to decrease sympathetic nervous system output and that's probably why it also works for hyperactivity and impulsivity (not so much for inattention)
- Clinical pearls:
 - Clonidine tends to cause more sedation than guanfacine
 - Guanfacine is also available in a long-acting version (brand name Intuniv) – allows for once per day dosing – same dose ranges
 - Alpha agonists are sometimes carefully combined with stimulants to address hyperactivity that hasn't responded to stimulant
- Alpha agonists are also very helpful sometimes for other types of symptoms in young children – PTSD dysregulation, irritability, reactive aggression, sleep problems

Dosing of Alpha-2 Agonists

- Start **low** and go **slow!**
- Not fast acting like stimulants
 - Takes a few weeks of consistent dosing to really see effect
- Monitor condition routinely to evaluate for side effects and to see if you have reached a dose that will give desired response
 - Monitor blood pressure and heart rate
 - Although rare, warn parents and adolescents about risk of rebound hypertension if they suddenly stop the medication, especially from a high dose
- If no improvement (after 2 weeks – 2 months) increase dose
 - Frequency of dose increases may be determined by side effects
 - At each dose, you may need to wait for patient's **blood pressure** to accommodate and for any **daytime sleepiness** to resolve (**the two main side effects**)
 - If current medication dose is already maximized, consider changing medication
 - If current medication is not well tolerated, consider changing medication

Summary of Meds for ADHD in preschoolers

- In young children, try other interventions first
- Medicines fall into three categories
 - Stimulants – two types of these
 - Methylphenidates
 - Amphetamines
 - Lots of different brand names
 - Non-stimulants
 - Alpha-2 agonists
 - Atomoxetine
- Most evidence: methylphenidate

Antipsychotics



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NEW
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STATE

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Mental Health



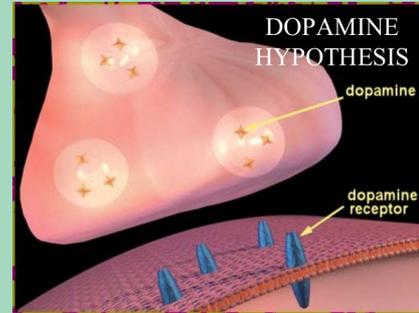
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POWERED BY NYU McSILVER

How Do Antipsychotics Work?

Dopamine Hypothesis

- Schizophrenia is the prototypic psychotic illness
- Dopamine neurotransmitter dysfunction plays a role in schizophrenia
 - Came from the discovery that chlorpromazine treated “positive symptoms”
 - D2 receptor sub-type most closely linked to symptom control in schizophrenia
 - New research looks at other neurotransmitters and neural circuits
- However, antipsychotics also act on lots of other receptors/neurotransmitters
 - Efficacy for treatment of other issues
 - Side effects



List of antipsychotic medications

First generation (Typical)	Second Generation (Atypical)
chlorpromazine (Thorazine)	aripiprazole (Abiify)
haloperidol (Haldol)	asenapine (Saphris)
Others are rarely used now	clozapine (Clozaril)
	lurasidone (Latuda)
	olanzapine (Zyprexa)
	paliperidone (Invega)
	quetiapine (Seroquel)
	risperidone (Risperdal)
	ziprasidone (Geodon)

FDA approvals for antipsychotics in young children

Medication	Diagnosis/condition	Age range
aripiprazole	Psychosis in schizophrenia	13-17
	Mania in bipolar	10-17
	Irritability in autism	5-17
risperidone	Psychosis in schizophrenia	13-17
	Mania in bipolar	10-17
	Irritability in autism	6-17

Commonly also used for impulsive aggression, mood lability/irritability without bipolar diagnosis, augmentation of antidepressants, PTSD dysregulation, and tic disorders

Studies supporting use of antipsychotics in preschoolers

- Open-label trials and one randomized controlled trial support use in autism
 - Masi *et al*, 2001 age 3-6 (open-label)
 - Masi *et al*, 2003 age 3-6 (open-label)
 - Luby *et al*, 2006 age 2-6 (RTC)
- Lack of high-quality research for use in ADHD and disruptive behavior disorders
 - Maybe as adjunct or treatment in preschoolers with ASD and co-morbid ADHD (Alsayouf 2024)
- Some case reports and one study for Obsessive Compulsive Disorder
 - Cognitive-Behavioral Family Therapy and aripiprazole for treatment of OCD (Izmir 2022)

Antipsychotic side effects

Second generation antipsychotics
require blood draws for monitoring
blood sugar and lipids

- Sedation
- Anticholinergic effects (dry mouth, constipation, blurry vision, etc)
- Weight gain*** (Avrahami 2021) – aripiprazole causes less than others
- Elevated glucose/insulin resistance
- Elevated triglyceride and cholesterol levels
- Extrapyramidal symptoms (not common in young children)
- Irreversible involuntary movements (tardive dyskinesia) (usually only with long-term use)
- Increased prolactin*** (Safavi 2016)
 - Downstream: Gynecomastia, galatorrhea, impact on bone density?
- Cardiac rhythm/conduction effects

Summary of antipsychotics in preschoolers

- Second to third line - try psychosocial and parent interventions first, other meds
- Some evidence for irritability in autism
 - But consider treating co-morbidities first
- Often used for other indications (per epidemiologic studies)
 - Impulsive aggression
 - Irritability
 - ADHD
- Complicated list of side effects
 - Weight gain
 - Need for blood monitoring

Interesting possibilities for autism:

- Serotonin Specific Reuptake Inhibitors in Fragile X Syndrome
- Melatonin (sleep hormone)
- N-acetyl cysteine (antioxidant supplement)
- Metformin (diabetes medicine) in Fragile X Syndrome
- Cannabidiol

Antidepressants



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Antidepressants



Selective Serotonin Reuptake Inhibitors

generic name	Brand name
fluoxetine	Prozac
paroxetine	Paxil
sertraline	Zoloft
fluvoxamine	Luvox
citalopram	Celexa
escitalopram	Lexapro

Selective Serotonin Norepinephrine Reuptake Inhibitors

venlafaxine	Effexor
desvenlafaxine	Pristiq
duloxetine	Cymbalta

Other antidepressants

bupropion	Wellbutrin
mirtazepine	Remeron
Clomipramine	Anafranil
Imipramine	

Antidepressants

Potential Uses Based on use in other age groups:

- Anxiety disorders
- Obsessive-Compulsive Disorders
- Post-Traumatic Stress Disorder
- Depressive/mood disorders
- Autism, especially Fragile X, as noted above

TABLE. FDA-approved antidepressant medications in pediatric patients

Class	Medication	FDA indication	Age range (years)	Target dose (mg/d)
SSRI	Fluoxetine	Major depressive disorder	8-17	40
		Obsessive compulsive disorder	7-17	40
	Fluvoxamine	Obsessive compulsive disorder	8-17	150
	Sertraline	Obsessive compulsive disorder	6-17	150
	Escitalopram	Major depressive disorder	12-17	>10
SSNRI	Duloxetine	Generalized anxiety disorder	7-17	60-90

SSRI's

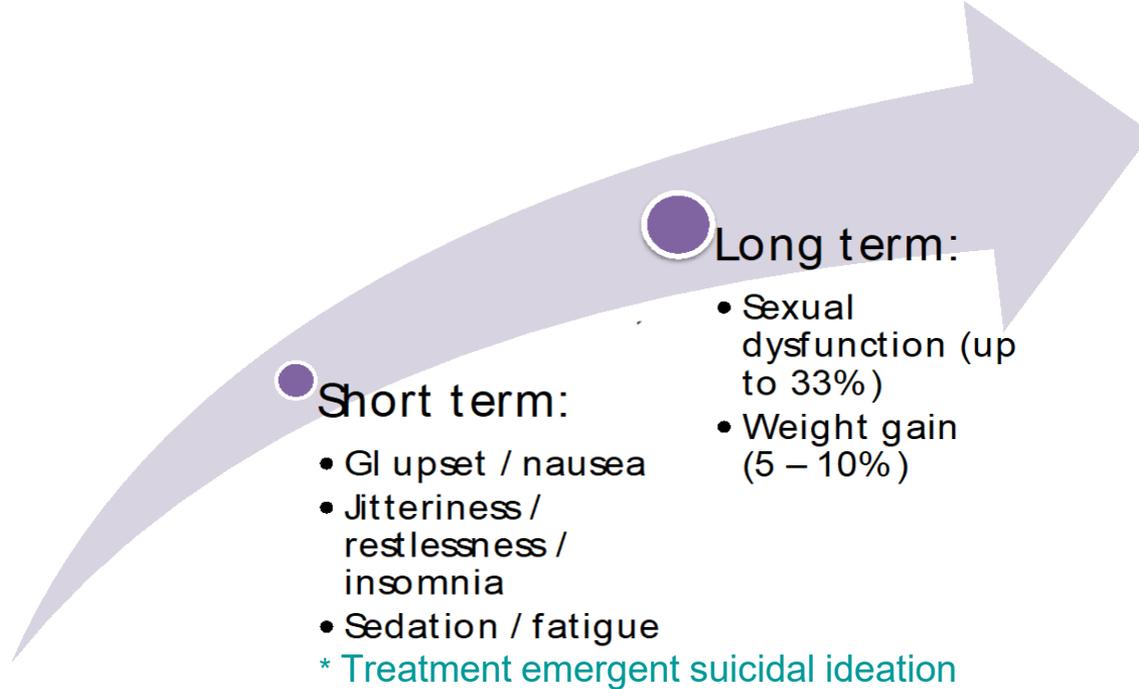
DON'T FORGET to try therapy first

- CBT
- PCIT
- CPP
- Play Therapy

There are good studies for all these indications for evidence-based psychotherapy

- Only case studies and quasi-experimental studies for young children
 - Small case studies for anxiety (Romanowicz 2025)
 - Mainly selective mutism
 - Fluoxetine most published papers, sertraline second runner-up
 - Activation common
 - Case series for “anxiety syndromes” (Romanowicz 2025)
 - Escitalopram for generalized anxiety disorder, separation anxiety disorder, OCD, PTSD
 - Improvements, but behavioral disinhibition and other side effects prompted discontinuation in some
 - Obsessive-Compulsive Disorder (Romanowicz 2025)
 - Based on anxiety studies, reasonable to try fluoxetine, sertraline, escitalopram
 - Maybe fluvoxamine, maybe aripiprazole (antipsychotic)
 - Post-Traumatic Stress Disorder – no medications recommended for core symptoms
 - Alpha-2 agonists sometimes helpful for dysregulation, melatonin or alpha-2 agonists for insomnia
 - No studies looking at treatment of depression in preschool age group
 - Perhaps some emerging data for use in autism (Aishworiya 2024)

Common Side Effects for SSRI/SNRIs



This is referring to adults, but since we don't have a lot of data for kids ...

Preschool reports notable especially for activation/behavioral disinhibition

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Summary of antidepressants in preschoolers

- Only evidence is for SSRI's (selective serotonin reuptake inhibitors)
 - Some evidence for treatment of anxiety disorders in combination with therapy
 - Possible efficacy in autism
- Use of tricyclics (for enuresis) is very rare now
 - Behavioral interventions
 - Desmopressin

Antihistamines

- diphenhydramine (Benadryl)
 - Allergy medication – used for side effect of sedation/calming effect in children
 - Two studies looked at use for sleep
 - Decreased sleep latency and nighttime awakenings vs placebo – age 2-12 (Russo 1976)
 - No effect on sleep in infants 6-15 months (Merenstein 2006)
 - Use with caution in young children as can see disinhibition

Related medication hydroxyzine – concern that **longitudinal use** can lead to tics, anxiety, disturbances of conduct (Gober 2022)

And what about sleep?



- First of all, careful assessment if the problem is persistent
 - Rule-out anxiety, PTSD, ADHD, etc.
- Sleep hygiene should always be the first step
 - Sleep schedule/routine before going to bed
 - Limit screen time 2 hours before bedtime
 - Quiet activities before bedtime
 - Behavioral reinforcement and reward prevention
- Commonly used for insomnia
 - Melatonin (Weiss 2006)
 - Clonidine especially in the context of ADHD & PTSD
 - Benadryl

Anxiolytics: Benzodiazepines

- Examples:
 - lorazepam (Ativan)
 - clonazepam (Klonopin)
- Great for their immediate anxiolytic effect
 - Pediatrics uses for sedation for procedures sometimes
- Use with caution
 - Diversion potential
 - **Disinhibition and agitation in young children**

Notice I'm not including studies for psychiatric use in young children

Mood stabilizers



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Use of mood stabilizers in psychiatry

- Classically used for treatment of bipolar disorder
 - Does this exist in young children?
 - DC:0-5 does not include this disorder
 - Area of controversy overall – good overview by Luby, Tandon, and Belden in 2009 “Preschool Bipolar Disorder”
 - For pediatric mania, more studies support use of antipsychotics
- Often used to address emotional lability or impulsive aggression without bipolar diagnosis in older children

Mood Stabilizers – two examples

- Lithium (Eskalith, Lithobid)
- Anti-seizure medications
 - Valproic acid (Depakote, Depakene)

lithium (Eskalith, Eskalith CR, Lithobid)

- Therapeutic blood level range= 0.6-1.2 mEq/L
 - Requires blood monitoring for level and for thyroid/kidney function
 - Can be lethal in overdose in relatively small amount
- FDA approved for mania in bipolar disorder down to age 12 – this is the classic treatment of mania and use dates back to Greek/Roman culture
- Also used to augment depression tx
- Lots of side effects
 - Short-term
 - Preschoolers may be more susceptible
 - CNS (confusion, slurred speech, ataxia)
 - Polyuria
 - Long-term

valproic acid (Depakote, Depakene)

- FDA approved for bipolar mania, seizures, prophylaxis of migraine headaches (but not in preschoolers)
- Sometimes used for impulsive aggression, although use overall in children/adolescents has decreased with rise of 2nd generation antipsychotics
- Blood levels must be monitored in addition to liver function and blood counts
- Multiple significant side effects
 - Weight gain***
 - Liver toxicity
 - Pancreatitis (more common in children)
 - Abnormal bleeding/decreased platelet count
 - Poly-cystic Ovarian Syndrome
 - Fetal malformations (neural tube defects and others)

What about treatment of seizures?

- Psychiatry borrows some medicines originally intended for treatment of seizures
- Prevalence of seizures in young children
 - 3-5% of children have a febrile seizure by age 5
 - 0.5-1% of children have a non-febrile seizure by adolescence (UpToDate)
- Prevalence of seizure disorder/epilepsy in young children 0.63% (Russ, 2012)
 - Overlap with mental health – increased risk for depression, anxiety, ADHD, conduct problems, autism
- Specific medication may be indicated for some epilepsy syndromes

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Other anticonvulsants you might see:

levetiracetam (Keppra)
carbamazepine (Tegretol)
oxcarbazepine (Trileptal)
phenytoin (Dilantin)
ethosuximide (Zarontin)
zonisamide (Zonegran)
topiramate (Topamax)
lamotrigine (Lamictal)

Summary of mood stabilizers in preschoolers

- Limited utility for treatment of psychiatric disorders
 - Antipsychotics have limited but more evidence than mood stabilizers in young children
- More likely to see medicines from anticonvulsant category for treatment of seizure disorders
 - Children with seizure disorders are at higher risk for mental health issues

Section 2

Case examples



Moses



Moses is a 37 month-old male living with his mother and father.

- Language delay and pediatrician suggested evaluation. Motor milestones are on target overall and he does not seem significantly cognitively delayed.
- No significant changes in his routine or stressors/trauma.
- Mother concerned about frequent tantrums and aggression towards her and father.
- Up very late at night, wakes up very early in the morning. Mother has tried to limit day-time napping, but he does tend to take a nap for three to four hours each afternoon, and if she wakes him, he is extremely irritable.
- She would like to have him in daycare but is worried about enrolling him because of the tantrums and aggression.

Moses



- Eval for autism and for language development
- Psychosocial – may need behavioral treatment for ASD and speech therapy
- Potential medication targets – sleep, aggression, tantrums (emotional & behavioral dysregulation), language development (ASD/Fragile X)
- Sleep – melatonin – other symptoms settled down a lot!

Neveah



Neveah is a 43 month-old female.

- Neveah's mother and father recently re-united after spending a few months apart because they had been having a lot of arguments. Neveah's mother is now pregnant, about midway through the pregnancy. They are concerned about Neveah adjusting to having a sibling.
- Neveah's preschool teachers have been noticing that she is having a hard time staying in circle time and drifts from one activity to another more than the other children in the classroom.
- Neveah met all her milestones on time and has a more advanced vocabulary than many children her age.
- Neveah has been crying more often at drop-off than she did when she started daycare at around 24 months and when she transitioned to preschool a few months ago. She also starts crying at naptime.
- Family history: Father was in foster care as a child and diagnosed with ADHD and depression as a child. Mother has struggled with panic attacks and generalized anxiety.

Neveah



- Eval for PTSD, anxiety disorder, depressive disorder, ADHD
- Psychosocial – started in CPP and mother getting treatment for depression/anxiety/PTSD
- Potential medication targets – anxiety, ADHD symptoms, depressive symptoms
- Anxiety and depressive symptoms improved with therapy, still ADHD symptoms – stimulant worked well – also good candidate for atomoxetine as the stimulant inc anxiety a bit

Angelo



Angelo is 50 months old and lives with his mother.

- His father is involved, but mother and father have not lived with one another, and mother has been the primary custodian.
- Mother struggles with Angelo's behavior. He has difficulty following directions from her and will often become upset in public at which point he sometimes runs away from her.
- Father sometimes takes Angelo on vacations with his family but hasn't usually dealt with behavior problems with him and thinks mother doesn't know how to "handle him."
- Angelo recently started pre-K. He hadn't been in school before now and is definitely in the adjustment phase. His teachers say they are still getting to know him, so aren't sure what patterns they are seeing yet.

Angelo

- Eval for general development, trauma exposure including intergenerational trauma exposure and parenting practices, PTSD, ADHD (esp teacher info)
- Psychosocial – had eval for ASD (high-functioning in language), CPP with mother and gradual integration of father, heavy on co-parenting support, IEP
- Potential medication targets – hyperactivity, impulsivity, reactive tantrums (emotional & behavioral dysregulation)
- Hyperactivity/impulsivity – guanfacine, maybe stimulant trial in near future

Highly recommended references



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Questions, comments, discussion

Thank you!
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