

# Neurodevelopmental Disorders:

## Psychotropic Medication Recommendations for Target Symptoms in Youth



FLORIDA  
MEDICAID DRUG  
THERAPY MANAGEMENT  
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## TABLE OF CONTENTS

|                                    |   |
|------------------------------------|---|
| Goals of the Recommendations ..... | 4 |
| Organization and Disclaimer .....  | 5 |

### **Principles of Practice:**

|  |    |
|--|----|
| Evaluation and Comprehensive Assessment .....    | 6  |
| Initial Treatment Plan .....                     | 8  |
| Treatment with Psychotropic Medications .....    | 9  |
| Antipsychotic Medications .....                  | 9  |
| Proposed Routine Monitoring Strategy Table ..... | 10 |
| Adverse Effect Management Table .....            | 12 |
| National and Local Resources .....               | 13 |

### **Psychotropic Treatment in the Context of Neurodevelopmental Disorders for the Following Target Symptoms:**

|   |    |
|---|----|
| Hyperactive, Impulsive, and Inattention Behaviors ..... | 14 |
| Aggression .....  | 16 |
| Anxiety Symptoms.....                                   | 18 |
| Restricted, Repetitive Behaviors.....                   | 19 |
| Sleep Disturbances .....                                | 20 |
| Depression or Bipolar Disorder Symptoms.....            | 21 |

# Goals of the Recommendations

## GOALS

Youth living with autism spectrum disorders (ASD) and other neurodevelopmental disorders (NDD) that are chronic in nature are a unique and vulnerable population with special healthcare needs. Given the complexity of their illnesses and the high prevalence of comorbid conditions, they require a wide range of medical, behavioral and community services, and specialty care coordination across a multidisciplinary team. In addition, treatment depends on individual characteristics and needs.

These recommendations are intended to provide broad treatment suggestions for some common neurodevelopmental disorders presenting in the primary care setting, such as:

1. Autism spectrum disorders (ASD), a group of neurodevelopmental brain disorders which are diagnosed according to guidelines listed in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).
2. Intellectual disability (intellectual developmental disorder), a disorder characterized by both intellectual and adaptive functioning deficits in conceptual, social, and practical domains.

An expert panel was convened to review the most recent evidence and came to a consensus regarding treatment options for youth with neurodevelopment disorders. A list of the experts can be found at [medicaidmentalhealth.org](http://medicaidmentalhealth.org). The expert panel thought that all ASD and other neurodevelopmental disorders share common behavioral issues. As such, it would be helpful to organize the recommendations by the following target symptoms rather than diagnoses:

- ◆ hyperactive, impulsive, and inattention behaviors
- ◆ aggression, irritability, self-injury, violence, and explosive outbursts
- ◆ anxiety symptoms
- ◆ restricted repetitive behaviors
- ◆ sleep disturbances
- ◆ depression or bipolar disorder symptoms

Given the early onset and lifelong nature of these disorders, most youth will be exposed to multiple interventions addressing specific target symptoms. It is therefore important to provide care that is supported by the current scientific evidence.

# Organization and Disclaimer

## ORGANIZATION

The expert panel decided to categorize treatment options, based upon the strength of the science regarding a particular agent or treatment option for the *Neurodevelopmental Disorders: Psychotropic Medication Recommendations for Target Symptoms in Youth*. A numbering format was used instead of creating an algorithm where specific options are mandatory or had to be used first or diagrammatically looked like they had to be used first. The panel weighed both safety and efficacy issues when assigning a particular agent or treatment option to a number.

Number 1 options are considered to have stronger evidence and consensus than number 2 and higher. Number 0 refers to an assessment level prior to any decision regarding treatment options. The panel chose this approach with the understanding that using a particular option at any level would depend upon clinical judgment and patient or family needs or preferences.

## DISCLAIMER

The *Neurodevelopmental Disorders: Psychotropic Medication Recommendations for Target Symptoms in Youth* reflect the state of knowledge, current at the time of publication, on effective and appropriate care, as well as clinical consensus judgment when research findings are lacking. The inevitable changes in the state of scientific information and technology mandate that periodic review, updating, and revisions will be needed. These recommendations do not apply to all patients and each must be adapted and tailored to the individual patient. Proper use, adaptation, modifications or decisions to disregard these or other recommendations, in whole or in part, are entirely the responsibility of the clinician who uses these recommendations. The authors bear no responsibility for the use of these recommendations by third parties.



# Principles of Practice

## EVALUATION AND COMPREHENSIVE ASSESSMENT

The goals of the initial comprehensive assessment/evaluation are to document the child's performance levels, functional abilities in cognitive, language, and social domains, contributions of genetic/metabolic etiologies, and presence of comorbid medical/neurologic disorders such as epilepsy. The assessment/evaluation should include:

- Detailed developmental and symptom history to assess the full range of psychiatric symptoms and disorders, (i.e., irritability, inattention, impulsivity, aggressive behaviors, repetitive, restricted behaviors, anxiety, depression, and sleep disturbances) as well as impairment from these symptoms and disorders. The use of rating scales with specific ASD/NDD screens is highly recommended (**See measurement scales and checklist box on page 7**).
- A full medical history and physical examination including vision, hearing, and dental screening.
- Check for diet/nutritional deficiencies, seizures, sleep disturbances, and other medical problems.
- Special consideration for developmental speech, language, and communication assessments.
- Obtain medication history.
- Assessment of family structure and functioning including a safety assessment of the environment to identify:
  - ◆ Risk of harm to others or self
  - ◆ Nighttime wandering
  - ◆ Signs of abuse and/or neglect
- Behavior inventory using validated rating scales and checklists to document the occurrence of specific behaviors (**See measurement scales and checklist box on page 7**).
- Based upon results of history and physical examination consider as clinically indicated:
  - ◆ Psychometric testing
  - ◆ Genetic evaluation
  - ◆ Neurological assessment

## Principles of Practice *(continued)*

### **Measurement Scales:**

- Childhood Autism Rating Scale (CARS)
- Childhood Autism Spectrum Test (CAST) – Public Domain
- Social Communication Questionnaire (SCQ)
- Social Responsiveness Scale (SRS)
- Autism Behavior Checklist (ABC) – Public Domain

### **Behavior Checklist:**

- Aberrant Behavior Checklist (ABC) - can use to assess medication responses
- Autism Diagnostic Observation Schedule (ADOS)
- Autism Diagnostic Interview - Revised (ADI-R)

*Note: Both the ADOS and ADI-R are the "Gold Standard" if administered by qualified raters.*

## Principles of Practice *(continued)*

### INITIAL TREATMENT PLAN

**Pharmacotherapy is not the primary treatment for youth with neurodevelopmental disorders (NDD).** Aim therapy at the most impairing target symptom or diagnosis first. Treatment of co-occurring medical problems (e.g. seizures, medication changes and reactions warrant consideration as cause of disruptive behaviors).

- Psychoeducation for parents/caregivers regarding neurodevelopmental disorders and ADHD.
- Non-pharmacological treatment:
  - ◆ Behavior therapy - (e.g. PCIT, ABA, CBT and others)<sup>1</sup>
  - ◆ Speech/language therapy
  - ◆ Physical therapy
  - ◆ Social skills therapy
  - ◆ Special educational services (academic vs. life skills track)

<sup>1</sup>Parent-Child Interaction Therapy (PCIT), Applied Behavior Analysis (ABA), Cognitive Behavior Therapy (CBT).





## Principles of Practice (continued)

### TREATMENT WITH PSYCHOTROPIC MEDICATIONS

Although not considered as first line treatment; depending on the severity of symptoms some medications may be helpful. If the decision is made to use medication, monitoring for side effects is essential.

- Prior to beginning any psychotropic treatment:
  - ◆ Define symptom domain once medical aspects have been ruled out.
  - ◆ Always obtain resting blood pressure and heart rate at baseline and follow-up visits (can be difficult to obtain with some patients).
  - ◆ Baseline and follow-up ECG are only warranted if the child has evidence of cardiac disease or suspected genetic syndrome.

### ANTIPSYCHOTIC MEDICATIONS

- Prior to beginning antipsychotic treatment:
  - ◆ Obtain height and weight at every visit and monitor BMI.
  - ◆ Obtain baseline fasting glucose and lipids panel – every 6 months and repeat more frequently if there is rapid weight gain.
  - ◆ Complete baseline tardive dyskinesia screen (AIMS or DISCUS) – every 6 months and repeat more frequently if signs of abnormal movement.
  - ◆ Psychosocial treatments should exist concurrently.
- At treatment initiation:
  - ◆ Clearly establish the goal of antipsychotic therapy.
    - ◇ Which target symptom(s) are most impairing.
  - ◆ In general: start low, go slow.
  - ◆ Start with an antipsychotic that has a low adverse effect risk.
  - ◆ Provide healthy lifestyle information.
- Not recommended:
  - ◆ Use of antipsychotic medication without concurrent psychosocial treatment(s).
  - ◆ Olanzapine (Zyprexa) and olanzapine/fluoxetine (Symbyax) as first or second-line agent, or in patients who are overweight/obese ( $\geq$  85th percentile), dyslipidemic, or hyperglycemic.

## Principles of Practice (continued)

### Proposed Routine Monitoring Strategy in Youth with Neurodevelopmental Disorders Treated with Antipsychotic Agents

| Assessment  | Baseline                         | Each visit | During Titration and at Target Dose              | At 3 Months                      | At 6 Months                      | Annually                                    |
|---|----------------------------------|------------|--|----------------------------------|----------------------------------|---|
| Personal and family medical history <sup>a</sup>  | √                                | —          | —  | —                                | —                                | √   |
| Treatment efficacy, new medications and interaction effects with antipsychotics           | √                                | √          | —  | —                                | —                                | —   |
| Lifestyle behaviors <sup>b</sup>  | √                                | √          | —  | —                                | —                                | —   |
| Sedation/somnolence <sup>c</sup>  | √                                | √          | —  | —                                | —                                | —   |
| Calculate BMI percentile, BMI z score   | √                                | √          | -  | -                                | -                                | —   |
| Sexual/reproductive dysfunction   | √                                | —          | √  | √                                | —                                | —   |
| Parkinsonism (SAS or ESRS), Akathisia (AIMS or ESRS)*                                     | √                                | —          | √  | √                                | —                                | √   |
| Fasting blood glucose, HbA1C and lipids <sup>d</sup>                                      | √                                | —          | —  | √                                | √                                | —   |
| Tardive dyskinesia  | √                                | —          | —  | √                                | —                                | √   |
| Blood pressure and pulse  | √                                | √          | √ (during titration with clozapine & quetiapine) | —                                | —                                | —   |
| Liver function tests  | √                                | —          | —  | √                                | —                                | √   |
| Electrolytes, full blood count, renal function  | √                                | —          | —  | √                                | —                                | √ (more freq. blood counts if on clozapine) |
| Prolactin-related adverse effects (eg, galactorrhea, gynecomastia, oligorrhea/amenorrhea) | Only if symptomatic <sup>e</sup> | —          | Only if symptomatic <sup>e</sup>                 | Only if symptomatic <sup>e</sup> | Only if symptomatic <sup>e</sup> | Only if symptomatic <sup>e</sup>            |
| EKG   | Only if symptomatic <sup>f</sup> | —          | Only if symptomatic <sup>f</sup>                 | Only if symptomatic <sup>f</sup> | Only if symptomatic <sup>f</sup> | Only if symptomatic <sup>f</sup>            |

Note. Adapted from: Correll JAACAP 2008, De Hert et al. Nat Rev Endocrinology 2011, and Stephanie H. Ameis et al., 2013

\*AIMS: Abnormal Involuntary Movement Scale; ESRS: Extrapyramidal Symptom Rating Scale; SAS: Simpson Angus Rating Scale

## Principles of Practice *(continued)*

### **Monitoring the safety and tolerability of antipsychotics should lessen the side effects and help treatment outcome.**

<sup>a</sup> Including components of the metabolic syndrome (obesity, arterial hypertension, diabetes, dyslipidemia), seizures, and other neurologic disorders; current treatments/potential interaction effects with atypical antipsychotic (eg. fluoxetine and paroxetine may inhibit hepatic metabolism of aripiprazole and risperidone, resulting in increased blood levels of atypical antipsychotic); past medical history for coronary heart disease or coronary heart disease equivalent disorders (i.e., diabetes mellitus, peripheral arterial disease, abdominal aortic aneurysm, and symptomatic carotid artery disease); history of premature coronary heart disease or in first degree relatives (males <55 years, females <65 years), history of premature sudden cardiac death in first degree relatives (males <50 years, females <55 years), personal history of heart murmur, irregular heartbeat, tachycardia at rest, or dizziness or syncope upon exertion, and past efficacy and adverse effect experiences in patients and/or family members.

<sup>b</sup> Lifestyle behaviors: Diet, exercise, smoking, substance use, and sleep hygiene.

<sup>c</sup> Youth with neurodevelopmental disorders are particularly prone to sleep disturbances due to many comorbid conditions, social stressors experienced by this population, and the concurrent use of medications. Sleep hygiene should be optimized and reviewed at each visit. If sleep medication is administered it is important to use caution as to the choice of medication (pharmacologic and non-pharmacologic) and monitor for side effects.

<sup>d</sup> More frequent assessment may be necessary in high-risk patients (e.g., family history of diabetes, non-Caucasian ethnicity, BMI >95th percentile, weight gain >7% over 3 months or less, or weight gain >0.5 BMI z-score at any time point); HbA1C better identifies patients with pre-diabetes than fasting glucose alone.

<sup>e</sup> In case of symptoms or signs of sexual dysfunction (amenorrhea, oligomenorrhea, gynaecomastia, galactorrhoea, hirsutism, erectile dysfunction) draw fasting labs in the morning and approximately 12 hours after the last antipsychotic dose. Some authors recommend assessment at baseline and after titration due to the unclear effects of asymptomatic long term hyperprolactinemia in children and adolescents (Ho et al., J Can Acad Child Adolesc Psychiatry, 2011).

<sup>f</sup> In case of family history of sudden cardiac death in first degree relatives (males <50 years, females <55 years), prolonged QT syndrome, personal history of heart murmur, irregular heartbeat, tachycardia at rest, dizziness or syncope upon exertion; or in the case of co-treatment with another QTc prolonging medication (<http://www.azcert.org/medical-pros/drug-lists/bycategory.cfm#>).

## Principles of Practice *(continued)*

### Adverse Effect Management During Atypical Antipsychotic Treatment in Youths with Neurodevelopmental Disorders

| If the Concerns are                            | Intervention  |
|--|---|
| Weight gain and metabolic abnormalities        | <ul style="list-style-type: none"> <li>• Provide healthy lifestyle counseling</li> <li>• Begin or switch antipsychotic with low adverse effect risk</li> </ul>  |
| If weight gain/metabolic abnormalities persist | <ul style="list-style-type: none"> <li>• Provide healthy lifestyle, weight loss counseling</li> <li>• Switch to lower risk antipsychotic</li> <li>• Consider targeted treatment for:                             <ul style="list-style-type: none"> <li>- Abnormal weight</li> <li>- Obtain laboratory and blood pressure values</li> <li>- Initiate lipid-lowering diet for dyslipidemia</li> <li>- Refer to specialist</li> </ul> </li> </ul> |
| Neuromotor adverse effects                     | <ul style="list-style-type: none"> <li>• Monitoring for movement disorders in youth with NDD can be difficult due to stereotypy and repetitive behaviors</li> <li>• Individualized strategy and family member participation may be necessary for compliance</li> <li>• Comprehensively assess abnormal movements at baseline and follow-up with objective rating scales</li> </ul>  |
| Parkinsonism, dystonia (EPS)                   | <ul style="list-style-type: none"> <li>• Reduce dose</li> <li>• Add anticholinergic medication</li> <li>• Switch to lower-risk agent</li> </ul>   |
| Akathisia                                      | <ul style="list-style-type: none"> <li>• Reduce dose</li> <li>• Add benzodiazepine or B-blocker</li> <li>• Switch to lower-risk agent</li> </ul>  |
| Dyskinesia                                     | <ul style="list-style-type: none"> <li>• Review indication</li> <li>• Consider stopping</li> <li>• Switch to lower-risk agent</li> </ul>  |

*Note. Adapted from Stephanie H. Ameis et al; Decision Making and Antipsychotic Medication Treatment for Youth with Autism Spectrum Disorders: Applying Guidelines in the Real World. J Clin Psychiatry 74:10, October 2013.*

## Principles of Practice (continued)

Provided is a list of national and local resources for youth with neurodevelopmental disorders. This list does not infer endorsement of the following websites.

### NATIONAL RESOURCES:

1. Autism Speaks Autism Treatment Network (ATN) – <http://www.autismspeaks.org/family-services/tool-kits>
2. Center for Disease Control and Prevention (CDC) – <http://cdc.gov>
3. Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) – <http://nichd.nih.gov>
4. National Institute of Mental Health (NIMH) – <http://nimh.nih.gov>
5. M.I.N.D. Institute (Medical Investigation of Neurodevelopmental Disorders) [http://ucdmc.ucdavis.edu/mind\\_institute](http://ucdmc.ucdavis.edu/mind_institute)

### LOCAL RESOURCES:

1. Autism Speaks, Florida – [http://communities.autismspeaks.org/site/c.ihLPK1PDLoF/b.7501065/k.66E4/Autism\\_Speaks\\_in\\_Florida.htm](http://communities.autismspeaks.org/site/c.ihLPK1PDLoF/b.7501065/k.66E4/Autism_Speaks_in_Florida.htm)
2. Florida Developmental Disabilities – <http://www.fddc.org/>
3. Autism Society of Florida, Inc. – <http://www.autismfl.com/>
4. Family Network on Disabilities (FND) – [www.fndfl.org](http://www.fndfl.org)
5. Reaching Potentials – [www.reachingpotentials.org](http://www.reachingpotentials.org)
6. Heal! – [www.healautismnow.org](http://www.healautismnow.org)
7. Center for Autism and Related Disabilities (C.A.R.D.) by service regions in Florida:
  - ◆ Florida State University – <http://autism.fsu.edu>
  - ◆ University of Central Florida – <http://www.ucf-card.org/>
  - ◆ University of Florida, Gainesville – <http://card.ufl.edu/>
  - ◆ University of Florida, Jacksonville – <http://www.hscj.ufl.edu/pediatrics/autism/>
  - ◆ Florida Atlantic University, Boca Raton – <http://www.coe.fau.edu/centersandprograms/card/default.aspx>
  - ◆ University of Miami – <http://www.umcard.org/>
  - ◆ University of South Florida – <http://card-usf.fmhi.usf.edu/>

# Treatment of Hyperactive, Impulsive, and Inattention Behaviors in the Context of Neurodevelopmental Disorders

## 1. STIMULANT MONOTHERAPY:

Many youth with neurodevelopmental disorders (NDD) experience behaviors and symptoms of hyperactivity, impulsivity, and inattention (ADHD) similar to children without NDD. Youth with NDD can benefit from the same evidence-based treatments successful with normal developing children.

**However, use stimulants with caution since adverse effects may be higher in youth with NDD compared to normally developed youth with primary ADHD. Close monitoring is recommended.**

**Additional stimulant recommendations can be found in the ADHD guidelines for children and adolescents available at [medicaidmentalhealth.org](http://medicaidmentalhealth.org).**

■ **No Response:** Discontinue and proceed to **non-stimulant monotherapy**.

## 2. NON-STIMULANT MONOTHERAPY (See references on next page)

### ■ Atomoxetine

◆ **Begin dosing:** 10 mg q am after breakfast and increase by 10 mg per week.

◇ Can be given at bedtime or on a b.i.d. schedule.

◆ **Partial response:** Proceed to **combined therapy**.

### ■ Guanfacine\*

◆ **Begin dosing:** 0.5 mg q am and increase by 0.5 mg each week in a b.i.d. manner.

◇ Doses > 4 mg/day may necessitate t.i.d. dosing resulting in possible administration during school.

◆ **Partial response:** Proceed to **combined therapy**.

*\*Despite limited evidence guanfacine ER (Intuniv) may be considered after optimal daily dose of guanfacine is established.*

## 3. PARTIAL RESPONSE: COMBINED THERAPY

**Before combination therapy is initiated, when possible, obtaining consultation with a mental health specialist is recommended.**

If there is a partial response with either guanfacine or atomoxetine for motor hyperactivity/impulsivity but inattention remains, interfering with functioning, consider addition of **short acting** methylphenidate (MPH) or amphetamine (AMP) preparation.

■ **Begin dosing:** 2.5 mg q am and increase by 2.5 mg every three to four days in a b.i.d. manner.

■ If no response to adding a stimulant preparation, discontinue all medications and proceed to **risperidone monotherapy**.

# Treatment of Hyperactive, Impulsive, and Inattention Behaviors in the Context of Neurodevelopmental Disorders (continued)

## 4. RISPERIDONE MONOTHERAPY (See references below)

Before risperidone treatment is initiated, when possible, obtaining consultation with a mental health specialist is recommended (see *Principles of Practice on page 9 prior to treatment*).

- **Begin dosing:** 0.25 mg q hs and increase by 0.25 mg per week in a once daily or b.i.d. manner.
- **No response:**
  - ◆ Refer to mental health specialist.
  - ◆ Re-assess diagnosis.
  - ◆ Increase psychosocial intervention.

| Hyperactive, Impulsive, and Inattention Behaviors |               |                     |                     |
|---|---------------|---------------------|---------------------|
| Medication  | Starting Dose | Titration*          | Discontinuation     |
| MPH or AMP (Short Acting)                         | 2.5 mg q am   | 2.5 mg/ 3-4 days    | No tapering needed  |
| Atomoxetine                                       | 10 mg q am    | 10 mg/ week         | 10 mg/ 3 days       |
| Guanfacine  | 0.5 mg q am   | 0.5 mg/ week b.i.d. | 0.5 mg/ 3 days      |
| Risperidone                                       | 0.25 mg q hs  | 0.25 mg/ week       | 0.25-0.5 mg/ 3 days |

\*Note. Continue titration until symptoms are adequately controlled, treatment-limiting side effects emerge or max daily dose is reached.

**Not recommended-** Clonidine/clonidine ER is not recommended due to sedative side effects.

## REFERENCES:

Stephanie H. Ameis, MD, MSc; Patricia Corbett-Dick, RN, MS, PNP, PMH, PMH NP; Lynn Cole, RN, MS, PNP; and Christoph U. Correll, MD. *J Clin Psychiatry* 2013;74(10) 1022-1024.

Brian Reichow, Fred R. Volkmar. Systematic Review and Meta-analysis of Pharmacological Treatment of the Symptoms of Attention-Deficit/Hyperactivity Disorder in Children with Pervasive Developmental Disorders. *J Autism Dev Disord* (2013) 43:2435-2441.

Matthew Siegel, Amy A. Beaulieu. Psychotropic Medications in Children with Autism Spectrum Disorders: A systematic Review and Synthesis for Evidence-Based Practice. *J Autism Dev Disord* (2012) 42:1592-1605.

Emily Simonoff, Eric Taylor, Gillian Baird et al. Randomized controlled double-blind trial of optimal dose of methylphenidate in children and adolescents with severe attention deficit hyperactivity disorder and intellectual disability. *Journal of Child and Psychiatry* 54:5 (2013), pp 527-535.

# Treatment of Aggression: Irritability, Self-Injury, Violence, and Explosive Outbursts in the Context of Neurodevelopmental Disorders

## 1. ANTIPSYCHOTIC MONOTHERAPY

Currently, risperidone and aripiprazole are FDA approved in this population for specific behaviors.

**Prior to beginning antipsychotic treatment (see *Principles of Practice* on page 9).**

- **Begin risperidone dosing:** 0.25 mg q hs and increase by 0.25 mg per week in a once daily or b.i.d. manner.
- **No response:** Discontinue and proceed with **aripiprazole**.

*Note. There is little information to guide dosing strategies for aggression. However, for aggressive children treated with risperidone, doses are about half that of the usual antipsychotic dose.*

- **Begin aripiprazole dosing:** 2.5 mg/day and increase by 2.5 mg every 1-2 weeks in a once daily dose.
- **No response:** Discontinue and proceed to **ziprasidone**.

## 2. ZIPRASIDONE

*Note. Consider ziprasidone in patients who are over-weight/obese since studies show no significant weight gain.*

- **Begin dosing:** 20 mg b.i.d. and increase by 20 mg b.i.d. every week as needed.
  - ◆ Over time, the entire daily dose can be collapsed into a once daily dose, if desired.
- **No response:** Discontinue and proceed to **quetiapine**.



[medicaidmentalhealth.org](http://medicaidmentalhealth.org)



## Treatment of Aggression: Irritability, Self-Injury, Violence, and Explosive Outbursts in the Context of Neurodevelopmental Disorders *(continued)*

### 3. QUETIAPINE

- **Begin dosing:** 25 mg b.i.d. and increase by 25 mg b.i.d every week as needed.
  - ◆ Can be given daily, b.i.d., or t.i.d.
- **No response:**
  - ◆ Refer to mental health specialist - child psychiatrist or applied behavior analyst; preschool; parent - child interaction therapy (PCIT).
  - ◆ Re-assess diagnosis.
  - ◆ Increase psychosocial interventions.

| Aggression   |               |                       |  |                                   |
|--------------|---------------|-----------------------|--|-----------------------------------|
| Medication   | Starting Dose | Titration*            | Maximun Dose                                       | Discontinuation                   |
| Risperidone  | 0.25 mg q hs  | 0.25 mg/<br>week      | Child (6-12): 2 mg<br>Adolescent (13-17): 4 mg     | 0.25-0.5 mg/ 3 days               |
| Aripiprazole | 2.5 mg/day    | 2.5 mg/<br>1-2 weeks  | Child (6-12): 15 mg<br>Adolescent (13-17): 15 mg   | 2.5-5 mg/ 3 days                  |
| Ziprasidone  | 20 mg b.i.d.  | 20 mg b.i.d./<br>week | Child (6-12): 80 mg<br>Adolescent (13-17): 160 mg  | 40 mg/ 3 days                     |
| Quetiapine   | 25 mg b.i.d.  | 25 mg b.i.d./<br>week | Child (6-12): 400 mg<br>Adolescent (13-17): 600 mg | Depending on<br>dose taper safely |

*\*Note. Continue titration until symptoms are adequately controlled, treatment-limiting side effects emerge or max daily dose is reached.*

## Treatment of Anxiety Symptoms in the Context of Neurodevelopmental Disorders

Limited evidence exists for these medications for anxiety (social anxiety, generalized anxiety, OCD) in youth with autism spectrum disorders.

Consider most appropriate option based on circumstances.

| Anxiety Symptoms |                         |               |                                |   |
|------------------|-------------------------|---------------|--------------------------------|---|
| Medication       | Starting Dose           | Titration*    | Discontinuation                | Comments                                    |
| Fluoxetine       | 2 mg q am               | 2 mg/ 2 weeks | Depending on dose taper safely | This population more prone to activation    |
| Buspirone        | 2.5 mg q am/<br>1 week  | 2.5 mg/ week  | 2.5 mg/ 3 days                 | —   |
| Mirtazapine      | 3.75 mg q hs/<br>1 week | 3.75 mg/ week | 7.5 mg/ 3 days                 | Weight gain;<br>Sedation (possible benefit) |

\*Note. Continue titration until symptoms are adequately controlled, treatment-limiting side effects emerge or max daily dose is reached.



[medicaidmentalhealth.org](http://medicaidmentalhealth.org)

# Treatment of Restricted, Repetitive Behaviors in the Context of Neurodevelopmental Disorders

**Restricted, repetitive behaviors include: Flapping, rocking, repetition of sounds or words, arranging and re-arranging items (not to be confused with OCD symptoms).**

- Tread carefully when attempting to reduce these behaviors as they may be helpful for self-regulation of anxiety, agitation and/or frustration.
- These behaviors should not be a target of treatment unless it is severely interfering with the individual's level of functioning in daily activities.
- Parent/family education is recommended.
- Cognitive Behavioral Therapy (CBT), Sensory Integration Therapy (SIT) and/or Applied Behavior Analysis (ABA) may be most beneficial treatment.

## 1. ANTIPSYCHOTIC MONOTHERAPY

Currently, risperidone and aripiprazole are FDA approved in this population for specific behaviors.

**Prior to beginning antipsychotic treatment (see Principles of Practice on page 9).**

- **Begin risperidone dosing:** 0.25 mg q hs and increase by 0.25 mg per week in a once daily or b.i.d. manner.
- **No response:** Discontinue and proceed with **aripiprazole**.
- **Begin aripiprazole dosing:** 2.5 mg/day and increase by 2.5 mg every 1-2 weeks in a once daily dose.

*Note: For management of repetitive self-injurious behaviors please review the **Treatment of Aggression** found on page 16 of this document.*

| Restricted, Repetitive Patterns of Behavior |               |                      |  |                    |
|---|---------------|----------------------|--|--------------------|
| Medication                                  | Starting Dose | Titration*           | Maximun Dose                                     | Discontinuation    |
| Risperidone                                 | 0.25 mg q hs  | 0.25 mg/week         | Child (6-12): 2 mg<br>Adolescent (13-17): 4 mg   | 0.25-0.5 mg/3 days |
| Aripiprazole                                | 2.5 mg/day    | 2.5 mg/<br>1-2 weeks | Child (6-12): 15 mg<br>Adolescent (13-17): 15 mg | 2.5-5 mg/3 days    |

*\*Note. Continue titration until symptoms are adequately controlled, treatment-limiting side effects emerge or max daily dose is reached.*

# Treatment of Sleep Disturbances in the Context of Neurodevelopmental Disorders

Assessment of proper sleep hygiene

- Youth with neurodevelopmental disorders experience significant sleep disturbances that can lead to sleep deprivation for both the child and family. Underlying medical issues (GERD, sleep apnea, night tremors, seizures, anxiety, etc.) need to be identified.

Poor sleep habits are a factor to consider when parents/children report inadequate sleep, for example: irregular bedtimes and wake times that lack regular routine (See reference below).

## 1. MELATONIN (Over the counter medication)

- **Begin dosing:** 1-3 mg and increase up to 9 mg daily as needed.

*Note. May find differences in response due to proprietary brands.*

- **No response:** Discontinue and proceed to suggested medications.

Limited evidence exists for these medications in children and adolescents

| Sleep Disturbances |                      |   |                           |
|--------------------|----------------------|---|---------------------------|
| Medication         | Starting Dose        | Titration                                       | Discontinuation           |
| Melatonin          | 1-3 mg daily         | Up to 9 mg daily                                | As clinically appropriate |
| Trazodone*         | 25 mg q hs/ 1 week   | 25 mg/ week                                     | 25-50 mg/ 3 days          |
| Clonidine          | 0.05 mg q hs/ 1 week | 0.05 mg/ week                                   | 0.05 mg/ 3 days           |
| Mirtazapine        | 3.75 mg q hs/ 1 week | 3.75 mg/ week                                   | 7.5 mg/ 3 days            |
| Hydroxyzine        | 12.5-25 mg q h       | If necessary, based on response and body weight | As clinically appropriate |

*\*Note. Continue titration until symptoms are adequately controlled, treatment-limiting side effects emerge or max daily dose is reached.*

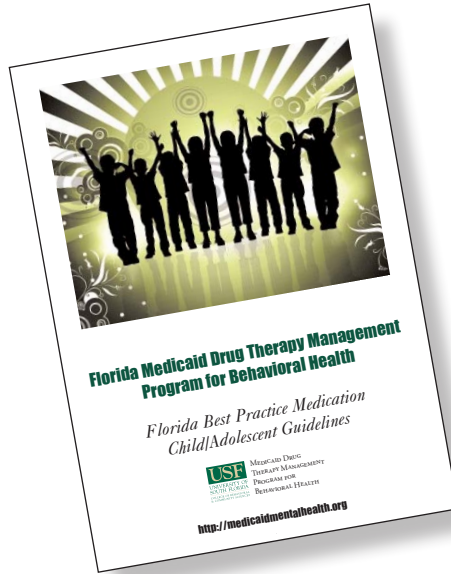
## REFERENCE:

Jan, J. E., Owens, J. A., Weiss, M. D., Johnson, K. P., Wasdell, M. B., Freeman, R. D., and Ipsiroglu, O. S., 2008. Sleep Hygiene for Children with Neurodevelopmental Disabilities. *Pediatrics* 122,1343. doi: 10.1542/peds.2007-3308

# Treatment of Depression or Bipolar Disorder Symptoms in the Context of Neurodevelopmental Disorders

Challenges exist in diagnosing depression or bipolar disorder in this population and there are no published double-blind, placebo controlled trials of medication for treatment at the time of this publication. It is recommended to follow the guidelines already developed for Major Depression and Bipolar I in Children and Adolescents 6-17 years old.

**Guidelines found at: <http://medicaidmentalhealth.org/Guidelines/child.aspx>**



[medicaidmentalhealth.org](http://medicaidmentalhealth.org)

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