Management of Attention Deficit/Hyperactivity Disorder (ADHD)—How the Pharmacist Can Impact Care

POSTTTEST/RATIONALE

Case I

The parents of a boy, 4 years of age ask the pharmacist for consultation about managing attention deficit hyperactivity disorder (ADHD) in their son who is physically healthy but has been asked not to return to preschool because of his hyperactivity, inattention, and disruptive, oppositional behavior. The child reached developmental milestones (e.g., walking, talking) at appropriate intervals, has a normal IQ and is approximately the 80th percentile for his height and weight.

Diagnoses: Attention deficit hyperactivity disorder, oppositional defiant disorder (ODD)

1. In order for the diagnosis of ADHD to be valid, which of the following criteria are most important:

   A. Screening to rule out autism spectrum disorder
   B. Functionally impairing symptoms in multiple settings***
   C. ADHD diagnosis in a first-degree biological relative
   D. Persistent inattention and hyperactivity for one month

Correct answer: B

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), it is possible to have both ADHD and autism spectrum disorder at the same time. Genetic association is not required for a diagnosis. Symptoms must persist in multiple settings for 6 months, not one month.

2. What do you recommend for first-line treatment?

   A. Methylphenidate 0.3 to 0.5 mg/kg/day or between 5 and 10 mg/day in divided doses
   B. Atomoxetine 0.5 mg/kg/day or 10 mg twice daily
   C. Clonidine 0.05 mg 3 times daily
   D. Positive rewards for good behavior and structured limit setting***

Correct answer: D
The American Academy of Pediatric’s Practice Guideline for ADHD recommends a trial of behavioral interventions before considering medications for preschoolers with ADHD.

3. At 5 years of age the child is started on methylphenidate for persistent ADHD symptoms. During counseling, you make note of which side effect is more common in preschoolers compared with older children who take methylphenidate?

   A. Mood lability, emotionality***
   B. Trouble falling asleep
   C. Motor and vocal tics
   D. Decreased appetite

Correct answer: A

The preschool ADHD studies showed that younger children, aged 4 to 6 years, are more prone to “emotionality and mood lability” compared with older children given stimulants. The other side effects seem to occur at similar rates in preschoolers and elementary school aged children.

4. The patient’s ADHD symptoms substantially improve on methylphenidate 10 mg/day, with good tolerability, except for occasional insomnia. Behavioral interventions are only partially effective for oppositional defiant symptoms. What do you recommend?

   A. Change to mixed amphetamine salts
   B. Add clonidine or guanfacine at bedtime***
   C. Cross-titrate to atomoxetine
   D. Add risperidone at bedtime for aggression

Correct answer: B

Mixed amphetamine salts are not less likely to cause insomnia compared with methylphenidate. Atomoxetine may not work as well as methylphenidate to control symptoms. Risperidone should not be used for insomnia. Clonidine and guanfacine have been shown to improve insomnia when added to treatment with methylphenidate or amphetamine salts.

5. Guanfacine 0.5 mg is added to the patient’s regimen in an attempt to manage ODD. Which of the following side effects are now substantially more likely with the addition of guanfacine to the stimulant:

   A. Hypotension and bradycardia***
B. Tremor and restlessness
C. Pruritus and maculopapular rash
D. Nausea and abdominal pain

Correct answer: A

Guanfacine lowers blood pressure and heart rate, according to clinical trials in youth with ADHD. Nausea, abdominal pain, and rash are unlikely to occur.

6. A patient, age 12 years, cannot maintain focus in school despite taking methylphenidate, osmotic release (OROS), 72 mg every morning for 1 month. He reports decreased appetite and occasional headaches and benefits from weekly cognitive behavior sessions, but cannot focus on homework. What will you recommend?

A. Continue methylphenidate OROS another 2 weeks for a full 6 week trial
B. Add atomoxetine in attempt to augment the effect of methylphenidate
C. Switch to a trial of mixed amphetamine salts or lisdexamfetamine***
D. Increase methylphenidate OROS to 100 mg daily for an adequate trial

Correct answer: C

Methylphenidate’s maximum recommended dose for adolescents is 72 mg and surpassing this dose could worsen the patient’s poor appetite and incidence of headache. There is no need to wait 6 weeks for an adequate therapeutic trial of a stimulant either. Studies show that if one stimulant is ineffective, another stimulant class can be effective.

7. Which of the following is a potential advantage of lisdexamfetamine compared with dextroamphetamine immediate release:

A. Less risk of stomach upset and abdominal pain
B. Slower onset and lower abuse potential***
C. Shorter duration of effect and less insomnia
D. Can be used for treatment of bulimia nervosa

Correct answer: B

Lisdexamfetamine requires gastrointestinal conversion to dextroamphetamine, its active form. This conversion accounts for its longer onset of effect compared with immediate release.
dextroamphetamine. It has a longer duration of action (~ 12 hours) compared with dextroamphetamine that may last up to 6 hours. Lisdexamfetamine is FDA approved to treat binge-eating disorder, not bulimia nervosa.

8. A new prescription for risperidone is added to this same patient’s stimulant therapy. Which of the following possible side effects of risperidone is this patient, 12 years of age, more likely to experience compared with an adult taking risperidone:

A. Weight gain and hyperlipidemia***
B. Tardive dyskinesia
C. Dizziness and tachycardia
D. Photosensitivity

Correct answer: A

Youth are more sensitive to the metabolic side effects of second-generation antipsychotics, including weight gain and hyperlipidemia, compared with adults. Tardive dyskinesia is more common in those older than 50 years of age. Dizziness, tachycardia, and photosensitivity can occur at similar rates people of all ages taking risperidone.

9. A woman, 24 years of age, with epilepsy diagnosed with ADHD as a child had been treated with mixed amphetamine salts. Currently in recovery for methamphetamine use disorder, she requests an effective treatment with no risk of abuse. Her current medication is lamotrigine 200 mg daily. You recommend

A. Clonidine
B. Lisdexamfetamine
C. Aripiprazole
D. Atomoxetine***

Correct answer: D
Clonidine has not been demonstrated to be effective for adults with ADHD. Lisdexamfetamine has abuse potential and would not be ideal. Aripiprazole is not effective for adult ADHD. Atomoxetine is the best choice because of the lack of abuse potential and the demonstrated effectiveness for adult ADHD.

10. The same patient above reports intolerable insomnia and anorexia from lisdexamfetamine. Which of the following regimens has the potential to manage ADHD symptoms with a lower risk of insomnia and anorexia?

A. Add guanfacine extended release to lisdexamfetamine
B. Change to immediate release methylphenidate with diphenhydramine for sleep
C. Start metacognitive therapy added to atomoxetine***
D. Add yoga and meditation to any immediate release stimulant

Correct answer: C

The section on special considerations for treating adults states that clonidine and guanfacine are not effective for adults with ADHD. Indeed, they are only FDA approved for use by adolescents 6 to 17 years of age with ADHD. Diphenhydramine is not discussed as an effective treatment option for insomnia associated with stimulants in adults.