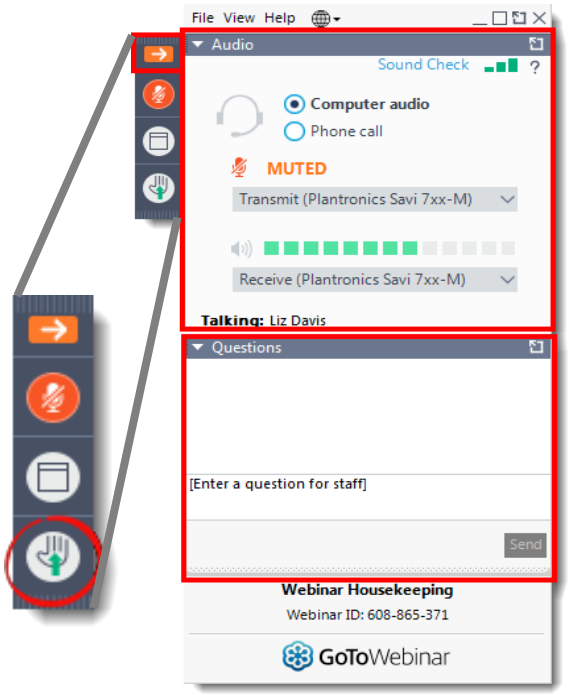
SIM Pediatric Office Hours

ADHD: Diagnosis, Management, and Diversion

APRIL 23, 2019

Housekeeping:
Webinar Toolbar Features



Your Participation

Open and close your control panel

Join audio:

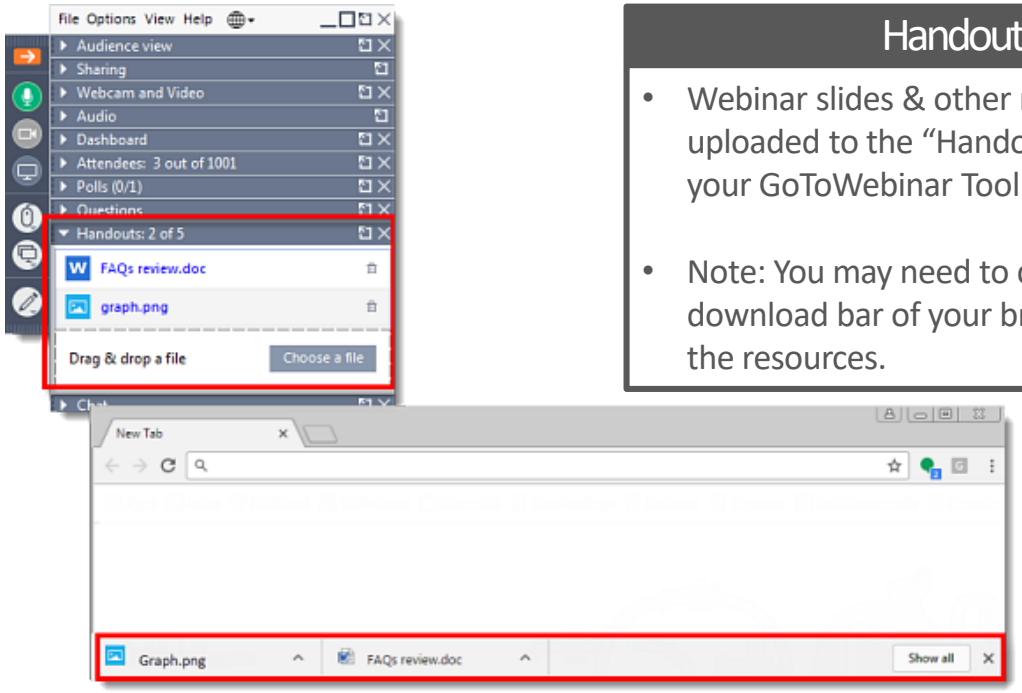
- Choose **Mic & Speakers** to use VoIP
- Choose **Telephone** and dial using the information provided

Submit questions and comments via the Questions panel

Note: If time allows, we will unmute participants to ask questions verbally.

- Please raise your hand to be unmuted for verbal questions.

Housekeeping:
Webinar Resources/Handouts



Handouts

- Webinar slides & other resources are uploaded to the “Handouts” section of your GoToWebinar Toolbar.
- Note: You may need to check the download bar of your browser to view the resources.

Tiffany Munzer, MD

FELLOW IN DEVELOPMENTAL BEHAVIORAL PEDIATRICS

MICHIGAN MEDICINE

PCMH Initiative Introduction

KATIE COMMEY, MPH
CARE DELIVERY LEAD

LYNDSAY TYLER
PROJECT COORDINATOR

ADHD: Diagnosis, Management, and Diversion

Tiffany Munzer, MD

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Objectives

- Recognize the signs and symptoms of ADHD.
- Understand basic steps for initiation of a medication– identify first line treatments for each age group.
- Know the big studies for ADHD.
- Counsel families and adolescents on diversion and abuse potential. Create a plan for adolescents if they are approached for diversion.

Incidence

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- One of the more common childhood conditions
- High prevalence of ADHD among school-aged children, between 4% to 12%
- Studies using parent reports indicate persistence of ADHD of 60% to 80% into adolescence

Importance

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- Children with ADHD have more problems with:
  - School/academic achievement
  - Overweight/obesity
  - Reduced earning power
  - Problems with the law
- Children with ADHD are also at higher risk of:
  - Oppositional defiant disorder (60%)
  - Anxiety (40%)
  - Tic disorder (8%)
  - Depression (30%)

ADHD definition

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- Neurodevelopmental disorder with a persistent pattern of inattention and/or hyperactivity-impulsivity which impairs activities of daily living or typical development.
- Behaviors are not appropriate for age or developmental stage.
- Really curious brains!

DSM-V Criteria– Inattention

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- **Inattention: Six or more symptoms of inattention for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of inattention have been present for at least 6 months, and they are inappropriate for developmental level:**
  - Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or with other activities.
  - Often has trouble holding attention on tasks or play activities.
  - Often does not seem to listen when spoken to directly.
  - Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., loses focus, side-tracked).
  - Often has trouble organizing tasks and activities.
  - Often avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time (such as schoolwork or homework).
  - Often loses things necessary for tasks and activities (e.g. school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
  - Is often easily distracted
  - Is often forgetful in daily activities.

DSM-V Criteria– Hyperactivity

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- **Hyperactivity and Impulsivity: Six or more symptoms of hyperactivity-impulsivity for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for the person's developmental level:**
  - Often fidgets with or taps hands or feet, or squirms in seat.
  - Often leaves seat in situations when remaining seated is expected.
  - Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless).
  - Often unable to play or take part in leisure activities quietly.
  - Is often "on the go" acting as if "driven by a motor".
  - Often talks excessively.
  - Often blurts out an answer before a question has been completed.
  - Often has trouble waiting his/her turn.
  - Often interrupts or intrudes on others (e.g., butts into conversations or games)

DSM-V Criteria

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- In addition, the following conditions must be met:
  - Several inattentive or hyperactive-impulsive symptoms were present before age 12 years.
  - Several symptoms are present in two or more setting, (such as at home, school or work; with friends or relatives; in other activities).
  - There is clear evidence that the symptoms interfere with, or reduce the quality of, social, school, or work functioning.
  - The symptoms are not better explained by another mental disorder (such as a mood disorder, anxiety disorder, dissociative disorder, or a personality disorder). The symptoms do not happen only during the course of schizophrenia or another psychotic disorder.

Diagnostic tools

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- Conners Rating Scale
  - For ages 6-18 years (year of age specific)
  - Gender specific and calculates T score
  - Conners Early Childhood for ages 2- 6 years
  - About $5 per scale and needs scoring program
- Vanderbilt
  - For ages 6-12 years
  - Free to use
  - Not gender specific or as specific

Diagnosis

- Obtain information from parent plus one additional source
  - School, therapy, church
- Impairment really should be in those two settings
- Call to obtain information or use a rating scale

Treatment

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- ADHD practice guidelines from the AAP are age-specific.
- Preschool: Behavioral therapy first (and high-quality preschool) and for moderate to severe instances, psychostimulant medication.
- School-age: Psychostimulant medication and behavioral therapy.
- Adolescent: Psychostimulant medication first and behavioral therapy.
- Adding behavioral therapy helps with parent and teacher satisfaction and school performance.
- Stimulants have more side effects the younger children are (hence the recommendation).

Treatment– Evidence in preschoolers

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- The PATS (The Preschool ADHD Treatment) Study
- 300 preschoolers ages 3-5 years
  - All children enrolled in behavior therapy
  - Those with most severe ADHD symptoms who did not improve were included in the medication study (with parent consent)
  - Results- children taking methylphenidate had improved ADHD symptoms compared to children taking a placebo, and young children were more sensitive than older children to the side effects, need close monitoring

Treatment– Evidence in school age

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- The MTA (Multimodal Treatment of Attention Deficit Hyperactivity Disorder) Study
  - 600 children ages 7-9 years
  - Looked at ADHD treatment including behavior therapy, medications, and the combination of the two
  - All children showed improvement with the most improvement noted with medication (with or without behavior therapy)
  - For academic performance and family relations the combination of behavioral therapy and medication was superior to the other treatment groups
    - Benefits noted for up to 14 months, at 8 year follow up treatment groups did not differ significantly

Treatment– behavioral therapy

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- Behavioral therapy typically used is parent-child interaction therapy
- Median effect size in studies is 0.55
- Helps improve compliance, and high levels of parent satisfaction

Treatment- psychostimulant

- First line treatment for children with ADHD ages 6 and older
- Safe and effective for children with ADHD, fast onset
- No lab monitoring needed
- Dosing- start low (not weight-based) and increase slowly for optimal effect with minimal side effects
- 95% of children with ADHD will respond to a psychostimulant
- Contraindications- MAOI use, arrhythmias, drug abuse, severe agitation or anxiety, symptomatic cardiovascular disease, hypertension
- Mechanism: blocks dopamine and norepinephrine re-uptake

Treatment- psychostimulant

- Side Effects and Monitoring
  - Headache
  - Stomach ache
  - Irritability
  - Decreased appetite
  - Increased HR and BP
  - Sleep initiation problems
  - Unmasking of motor tics
  - Must monitor weight, height, HR, BP, sleep

Treatment- psychostimulants

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Methylphenidate	Amphetamine Salts
Short (3-4 hours)	Ritalin short-acting 5 mg	Adderall short-acting 5 mg
Medium (6-8 hours)	Ritalin LA/Metadate CD 10 mg	
Long (10-12 hours)	Concerta 18 mg	Adderall long-acting 10 mg

Treatment- psychostimulants

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Methylphenidate	Amphetamine Salts
Short (3-4 hours)	Ritalin short-acting 5 mg	Adderall short-acting 5 mg
Medium (6-8 hours)	Ritalin LA/Metadate CD 10 mg	
Long (10-12 hours)	Concerta 18 mg	Adderall long-acting 10 mg

Treatment- psychostimulants

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Methylphenidate	Amphetamine Salts
Short (3-4 hours)	Ritalin short-acting 5 mg	Adderall short-acting 5 mg
Medium (6-8 hours)	Ritalin LA/Metadate CD 10 mg	
Long (10-12 hours)	Concerta 18 mg	Adderall long-acting 10 mg

Treatment- psychostimulants

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Methylphenidate	Amphetamine Salts
Short (3-4 hours)	Ritalin short-acting 5 mg	Adderall short-acting 5 mg
Medium (6-8 hours)	Ritalin LA/Metadate CD 10 mg	
Long (10-12 hours)	Concerta 18 mg	Adderall long-acting 10 mg

Treatment- psychostimulants

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Methylphenidate	Amphetamine Salts
Short (3-4 hours)	Ritalin short-acting 5 mg	Adderall short-acting 5 mg
Medium (6-8 hours)	Ritalin LA/Metadate CD 10 mg	
Long (10-12 hours)	Concerta 18 mg	Adderall long-acting 10 mg

Treatment- alpha2 agonist

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- Third line treatment, but we actually tend to use this more in younger children
- Symptom targets include impulsivity/hyperactivity and less side effects that psychostimulants in younger children
- Side effects: sedation, low blood pressure, constipation, abdominal pain
- Start low, titrate up
- Sympathomimetic agent that stimulants alpha adrenergic receptors, increases parasympathetic drive to help with impulse control

Alpha agonist

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Guanfacine	Clonidine
Short	Tenex 1 mg BID	Catapres 0.1 mg BID
Long	Intuniv 2 mg	Kapvay 0.1 mg BID

Alpha agonist

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Guanfacine	Clonidine
Short	Tenex 1 mg BID	Catapres 0.1 mg BID
Long	Intuniv 2 mg	Kapvay 0.1 mg BID

Alpha agonist

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Guanfacine	Clonidine
Short	Tenex 1 mg BID	Catapres 0.1 mg BID
Long	Intuniv 2 mg	Kapvay 0.1 mg BID

Alpha agonist

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Duration of action	Guanfacine	Clonidine
Short	Tenex 1 mg BID	Catapres 0.1 mg BID
Long	Intuniv 2 mg	Kapvay 0.1 mg BID

Non-stimulant

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- Strattera/Atomoxetine
- Norepinephrine reuptake inhibitor– exact mechanism unclear
- Less abuse potential
- Less efficacious for ADHD symptoms, technically second-line agent in the ADHD guidelines
- Can also help with anxiety
- Side effects: dry mouth, difficulty sleeping, abdominal pain, headache
- Rare but serious: liver failure

Psychostimulant– Addiction potential

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- At therapeutic doses, psychostimulants have low risk for addiction potential
- May even prevent substance use disorder when used in childhood
  - Promotes adaptive skills
  - Preparation to face challenges in the future
- However, does accumulate in the reward center (nucleus accumbens) at higher doses, and has been used recreationally
- Long-acting medications reduce the risk of manipulation for intranasal/intravenous use, and achievement of eupohoria
  - Concerta
  - Vyvanse

Medication diversion

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

- In high school, rates about 5-10%
- College, rates about 5-35%
- Providers and pharmacists serve as “gatekeepers”
- MAPS has made it easier to understand frequency of use
- Knowledge is power- psychoeducation of ADHD, discuss culture of diversion and risks
- Ask specifically at each visit if being approached to divert medications
  - Give a plan for if this happens– “What if you had an adverse reaction and ended up in the emergency department? I couldn’t live with myself.”
- Policies that enable schools to store medications in a safe, locked place

Resources

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

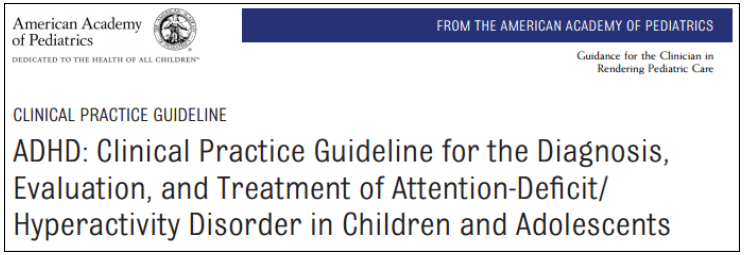
- Chadd.org
- Understood.org
- Smart but Scattered by Peg Dawson
- My Mouth is a Volcano by Julia Cook
- The way I feel by Janan Cain

References

Subcommittee on Attention-Deficit/Hyperactivity Disorder; Steering Committee on Quality Improvement and Management, Wolraich M, Brown L, Brown RT, DuPaul G, Earls M, Feldman HM, Ganiats TG, Kaplanek B, Meyer B, Perrin J, Pierce K, Reiff M, Stein MT, Visser S. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Pediatrics. 2011 Nov;128(5):1007-22.

The MTA Cooperative Group: A 14-Month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder (ADHD) . Arch Gen Psychiatry 1999;56:1073-1086.

Greenhill L, Kollins S, Abikoff H, McCracken J, Riddle M, Swanson J, McGough J, Wigal S, Wigal T, Vitiello B, Skrobala A, Posner K, Ghuman J, Cunningham C, Davies M, Chuang S, Cooper T. Efficacy and Safety of Immediate-Release Methylphenidate Treatment for Preschoolers With ADHD . J Am Acad Child Adolesc Psychiatry. 2006 Oct 4.



Thank you! Questions?

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN