Psychopharmacology Update - 2018 Annual Conference

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Objectives

• Review evidence-based treatment to common pediatric mental health disorders
• Review when & what psychotropic meds to use based on target symptoms & diagnosis
• Review side effects & monitoring of commonly used psychotropic meds
• Discuss common challenges in pediatric psychiatry
Mental Health Report Card

• Access/receiving mental health care
  – Iowa ranked 49th Adults, 40th children

• 30% children & teens have a diagnosable psychiatric disorder

• 20% of those children receive mental health care, often PCP
Prescriptions Written

• Off label use
  – 75% pediatric psych meds
  – Cost prohibitive
• How many Rx are not taken correctly or not even filled?
  – Cost, taste, time of dosing, parent
  – Misinformation: Internet, other parents, family members, community
  – Medicaid: foster care, Prior authorization

www.fda.gov/cder/drugsatfda
General principles

- Children are not small adults (usually)
- Establish diagnosis/diagnostic category
- Collaboration is key – family/caregiver, teachers, therapist
- Combined treatment regardless of severity yields better outcomes
- Goal in behavioral health is control, not cure
Evaluation Tools

- Clinical interview
- History
- Testing
- Medical Records
- Scales
Differential Diagnosis

• Thyroid, caffeine, seizures, asthma, and allergy medications

• Other psychiatric disorders (anxiety, ADHD, akathisias, bipolar, autism, learning disorders, substance abuse)
Principles of prescribing

• Target system approach
• Start low and go slow
• Efficacy vs. side effects
• Patience
• Establish baseline
• PRN prescriptions with caution
When should you consider medication?

• Negative impact on functioning
• Safety issues
• Poor response to other interventions
• Probability of efficacy for target symptoms

*Selection should be based on past history of response, side effect profile, & co-existing medical conditions
• Lipophilic medications
  – most psychotropic meds are highly lipophilic
  – Different volumes of fat for drug storage at different ages

• CYP450
  – Drug-metabolizing enzyme levels often exceed adult levels, declining after puberty
Antidepressants

Indications: bipolar depression, mood disorders, schizoaffective disorder, GAD, OCD, panic, social phobia, PTSD, PMDD, & impulsivity assoc. with personality disorders

SSRI    SDNRI    SNRI    TCA    MAOI
Black Box Warning

- Black Box Warning (2004, 2007 revised)
  - Increased risk of suicide in children and adolescents with major depressive disorder or other psychiatric disorders within the 1st month
  - No complete suicides in any studies
  - Liability in NOT treating too
SSRI

Selective serotonin reuptake inhibitor: affects release and reuptake of pre- and post-synaptic receptors

Differences between SSRIs

Fluoxetine, escitalopram, sertraline, citalopram, fluvoxamine, paroxetine
## SSRI

### Uses:
- Depression
- Anxiety
- OCD
- PTSD
- Rigid thinking associated with autism

### Other:

<table>
<thead>
<tr>
<th>Common side effects</th>
<th>Rare side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>Activation</td>
</tr>
<tr>
<td>GI issues</td>
<td>Black Box Warning</td>
</tr>
<tr>
<td>sedation</td>
<td>serotonin syndrome (hyper-reflexia, fever, flu-like sx, seizures, coma)</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Cardiac (celexa over 20mg, EKG indicated)</td>
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<tr>
<td>sexual dysfunction</td>
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</table>
Norepinephrine dopaminergic reuptake inhibitor

Uses: MDD, seasonal affective d/o, ADHD, nicotine addiction, and chronic pain

Affects the release and reuptake of brain NTs serotonin, norepinephrine, dopamine
### NDRI

**Bupropion** (good for augmenting, ‘meh’)

<table>
<thead>
<tr>
<th>Common side effects</th>
<th>Rare side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry mouth</td>
<td>Risk or seizures</td>
</tr>
<tr>
<td>Constipation</td>
<td>Activation</td>
</tr>
<tr>
<td>Nausea</td>
<td>* Avoid in TBI and eating disorders</td>
</tr>
<tr>
<td>Weight loss</td>
<td></td>
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</table>
Serotonin Norepinephrine Reuptake Inhibitor

Affects the release and reuptake of brain NTs serotonin, norepinephrine.

Uses: MDD, anxiety, OCD, ADHD, chronic pain
## Duloxetine, Venlafaxine, Desvenlafaxine

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Headache</td>
<td>Seizures</td>
</tr>
<tr>
<td>Sweating urinary retention</td>
<td>Discontinuation syndrome</td>
</tr>
<tr>
<td>somnolence</td>
<td></td>
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</tbody>
</table>
Tricyclic Antidepressants

Increase serotonin and norepinephrine availability

Uses: depression, ADHD, social phobia, panic, PTSD, eating disorders, enuresis, sleep, chronic pain, OCD (clomipramine only)
# TCA

## Clomipramine, Amitriptyline, Imipramine

<table>
<thead>
<tr>
<th>Common side effects</th>
<th>Rare side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-cholinergic (dry mouth,</td>
<td>Delirium</td>
</tr>
<tr>
<td>sedation, constipation,</td>
<td>Heart arrhythmia</td>
</tr>
<tr>
<td>urinary retention)</td>
<td>Death in OD</td>
</tr>
</tbody>
</table>
Buspirone

Serotonin agonist, decreases serotonin levels in specific areas of the brain while increasing DA & NE. also weak antagonist of D2 receptor

Not good by itself, better paired with SSRI

Uses: anxiety, ADHD, irritability, aggression

Side Effects: dizziness, headaches
Mirtazapine

Adrenergic antagonist and serotonin, tetracyclic antidepressant

MDD, Anxiety, PTSD, appetite stimulant, weight gainer

Side effects: hypotension, mania, photosensitivity, discontinuation syndrome

Dose 15-45mg/hs
Benzodiazepines

Increases GABA

GAD, sleep and panic disorders
Also used for agitation, alcohol withdrawal

Short term use, abuse potential
Benzodiazepines

Lorazepam, clonazepam, alprazolam, diazepam

<table>
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<tr>
<th>Common side effects</th>
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<tbody>
<tr>
<td>Sedation</td>
<td>Addiction</td>
</tr>
<tr>
<td>Cognitive issues</td>
<td>Seizures</td>
</tr>
<tr>
<td>Decreased libido</td>
<td>Delirium</td>
</tr>
<tr>
<td>depression</td>
<td>Blurred vision</td>
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</table>
Mood Stabilizers

Bipolar, disruptive behaviors disorder, aggression, DMDD

MOA unknown, possibly inhibits neuronal signaling and alters sodium transport

Lithium, valproic acid, lamotrigine, topiramate
Lithium

Gold standard mania, mood disorder, depression, schizophrenia

Common side effects: nausea, dizziness, weight gain, tremors, acne

Serious side effects: arrhythmia
Valproic acid

Affects GABA by blocking sodium channels and inhibit histone enzymes

Seizure mgmnt, migraines, mood disorder, impulsivity, pain control, aggression

Occassional labs (LFT, platelets)

Side effects: weight gain, sedation, Polycystic ovary disease, pancreatitis
Lamotrigine

Controls glutamate release, activates serotonin

Depressive phase of bipolar, epilepsy

Start 25-50mg/day, titrate up to 500mg BID

Fatigue, blurred vision, nightmares, dry mouth, Stevens Johnson Rash
Topiramate

Inhibits glutamate and enhances GABA

Seizures, migraines, chronic pain, alcohol cravings, aggression, impulsiveness

Side effects: brain fog, N/V, sedation, delirium, hot flashes (no weight gain)

Labs: LFTs, CBC/diff
Propanolol

Blocks epinephrine and norepinephrine

Migraine, performance anxiety

Nausea, constipation. Worsen depression

Contraindicated in those with heart issues
Alpha2-agonists

Strengthens working memory/connectivity in PFC

Clonidine (0.025-4mg/day)
  - ADHD, tics, sleep problems, aggression
  - Side effects: bradycardia, sedation

Guanfacine (1-4mg/day)
  - ADHD, tics, sleep problems, aggression
  - Intuniv (extended release)
  - Side effects: sedation, somnolence, trigger depression
Psychostimulants

Long acting are safe to start in most kids. Block reuptake of DA and NE. ADHD, off label MDD.

Common side effects: loss of appetite, insomnia, irritability, emotionality, tics. Rare side effects: mania, hallucinations, hypertension.

Vanderbilt, Connors gauge severity. EKG if family heart hx.
Newest Stimulants

- Methylphenidate: Quillichew, Cotempa-ODT, Aptensio XR
- Amphetamine: Myadyis, Dynavel XR, Adzenys-ODT
- Amphetamine mixed salts: Evekeo
- Lisdexamfetamine: Vyvanse
Memantine

Partial antagonist of the NMDA receptor, downregulates activity of glutamate

Controversial use in autism (mixed results)

Studies in anxiety and ADHD
First Generation Antipsychotics

Haloperidol, thioridazine, pimozide, chlorpromazine

Blocks receptors of dopamine

Treats psychosis, schizophrenia, bipolar, depression, aggression, tourettes, sleep, anxiety
First Generation Antipsychotics

Common side effects: sedation, dry mouth, constipation, increased hunger, restlessness, metabolic issues (Diabetes, lipids), sexual side effects

Rare side effects: prolonged QT interval, EPS, TD, NMS (rigid, high fever, unstable autonomic system), increase prolactin, pseudoparkinsonism
Second Generation Antipsychotics

Post-synaptic blockage of dopamine D2 receptors.

Tics, bipolar mania, schizophrenia, severe behavior disturbances, sleep, irritability associated with autism
Second Generation Antipsychotics

Risperidone (Risperdal)
- Side effects are dose dependent
- Weight gain and sedation very common

Olanzaoine (Zyprexa, Zydis)
- Weight gain very common & Metabolic labs

Quetiapine (Seroquel)
- Sedation & Weight gain common
- Hangover effect
Second Generation Antipsychotics

Ziprasidone (Geodon)
- Prolonged QT
- No associated weight gain
- Good for aggression and bipolar
- Take with food

Asenapine (Saphrys)
- sublingual (no food/drink x 10 min)
- rapid action, BID dosing, start at therapeutic dose
Second Generation Antipsychotics

Aripiprazole (Abilify)
- D2 partial agonist
- Low EPS, low QT, low sedation, With fluoxetine- possible activation

Lurasidone (Latuda)
- Daily with food, can start at therapeutic dose, rapid onset
- No prolonged QT, no weight gain
FGA/SGA lab monitoring

- Every visit: height, weight, BMI, AIMS
- Baseline, 3 months, then annually
  - hgbA1c, fasting glucose, fasting lipids
  - Prolactin
  - LFTs
Anticholinergics

Facilitates dopamine

Treats EPD, TD

• Benztropine, trihexyphenidyl, diphenhydramine
• Anticholinergic side effects: dry out
Vayarin (Omega 3s/6s) 2 capsules daily
EPA/DHA (brain health) 250-500mg daily
N-acetylcysteine (trichotillomania)
SAM-e 400-1600mg daily
L-methylfolate 3-15mg daily
CAM

• Investigational studies on the horizon
  – Electroconvulsive therapy
  – Transcranial magnetic stimulation
  – Deep brain stimulation
Pharmacogenetic Testing

• How well certain medications may be tolerated and effective
• Limitations – cannot determine how you will respond to all medications
• No tests for many over the counter medications
• MTHFR assists in converting essential amino acids
• Saliva sample
• No covered by all insurance
Take home points

- Know what you are treating and any comorbid diagnosis (often can get 2 birds / 1 stone)
- Diagnosis may unfold over time
- Step back and rethink your plan
- Drug-drug interactions
- Decrease stigma through education
- Collaborate and connect with others (Medications do not replace family support, safety, parenting, friends, hobbies, self-esteem, etc)
Thank You!
Helpful websites & resources

• [http://www.fda.gov/Drugs/ResourcesForYou/Consumers/ucm143565.htm](http://www.fda.gov/Drugs/ResourcesForYou/Consumers/ucm143565.htm)

• REACH Institute: designed to provide pediatric primary care practitioners with evidence-based instruction and mentoring around treatment of behavioral/mental health disorders [http://www.thereachinstitute.org/primarycareprofessionals.html](http://www.thereachinstitute.org/primarycareprofessionals.html)
Helpful websites

- AACAP’s Resources for Primary Care: http://www.aacap.org/AACAP/Resources_for_Primary_Care/Home.aspx?hkey=59bfd7f-149f-43fd-babb-a6a77c5e8caf
- NAPNAP’s Developmental Behavioral & Mental Health Special Interest Group: http://www.dbmhresource.org/
Helpful websites

– National Network of Child Psychiatry Access Projects
  http://www.nncpap.org/
– http://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/Facts_for_families_Pages/Psychiatric_Medication_For_Children_And_Adolescents_Part_IIL_Types_Of_Medications_29.aspx
– Healthy Children.org
  https://www.healthychildren.org/English/Pages/default.aspx


• AAP Policy statement, March 2014 [http://pedoatrocs.aapublications.org/content/133/3/563](http://pedoatrocs.aapublications.org/content/133/3/563)
References


References


References


• Fibinger, H. C. (2012). Psychiatry, the pharmaceutical industry, and the road to better therapeutics. Schizophrenia Bull., 38, 649-650

References

- Olfson, et al. (2006). Antidepressant Drug Therapy and Suicide in Severely Depressed Children and Adults A Case-Control Study. Arch Gen Psychiatry, 63, 865-872.


• Survey of Commonwealth of PA Medicaid findings (also published NEJM 1 Sept 2015).
References
