

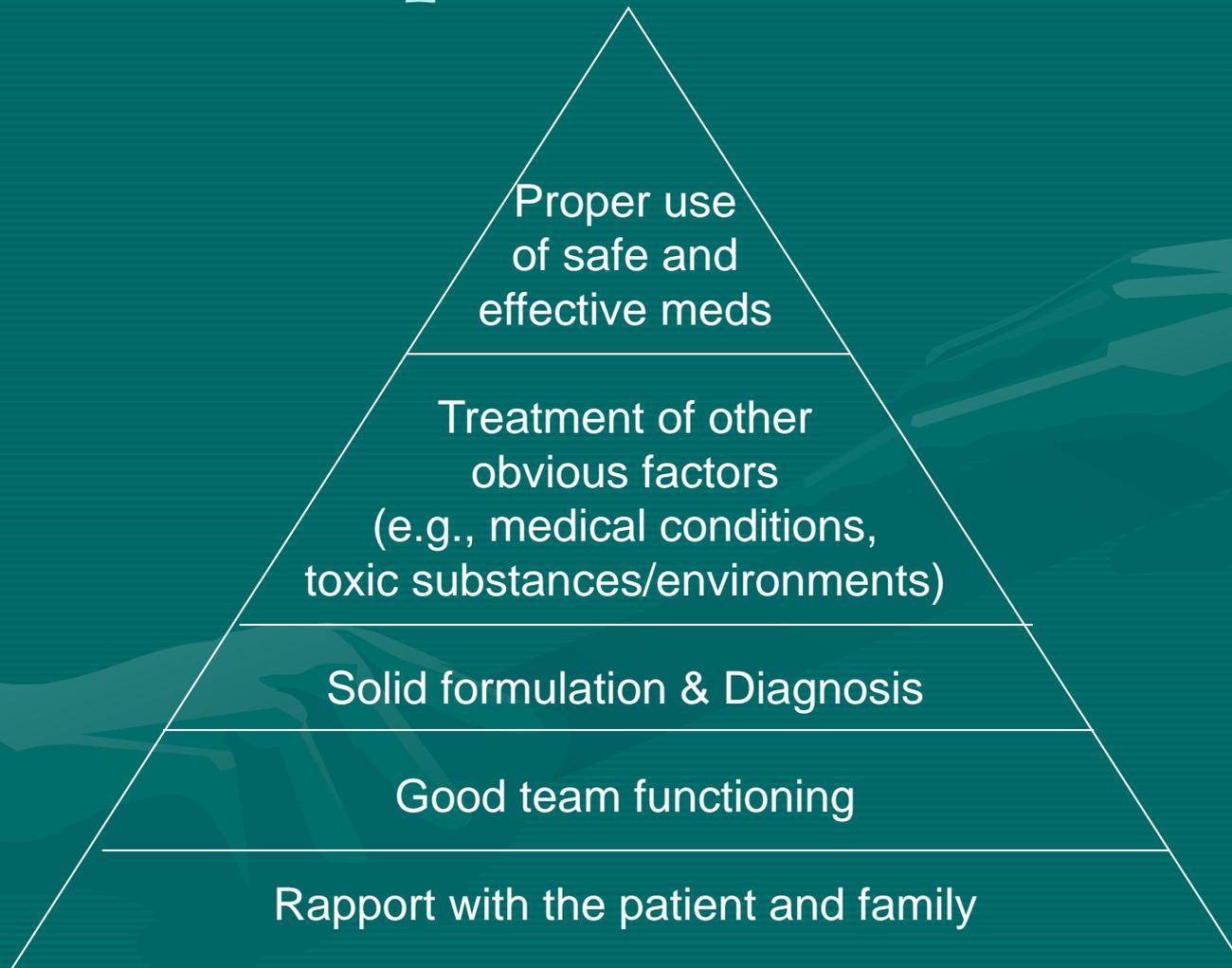


Pediatric Psychopharmacology:

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Good psychopharmacology depends on...



General Evaluation

- History with target symptoms
- History of prior medication use
- History of side effects
- History of compliance with medications
- Medical conditions or allergies
- Assessment of other conditions
- Other medications they are using
- Reliability
- Evidence-based or indications
- Collateral information (multiple informants)

Other things to consider:

- Informed consents
- Suicide and violence risk assessment
- Rating scales (many are free) –
 - Connors (ADHD)
 - CDI (depression)
 - Y-MRS, parent (bipolar disorder)
 - Y-BOCS (OCD)
- Medical Evaluation
 - Height, weight, blood pressure, pulse
 - Labs – Anemia, thyroid, syphilis, HIV, liver/kidney, pregnancy
 - EKG

Basic Principles:

- Most psychotropic medications are not FDA approved for children and adolescents
- Children and adolescents generally metabolize medications faster than adults
- Sometimes treating symptoms rather than actual disorders (but with evidence-based guidelines)
- Polypharmacy is sometimes used, although definitely not the ideal

“...data on safety and efficacy of most psychotropics in children and adolescents remain rather limited and are in sharp contrast with the advances and sophistication of the adult field. In child and adolescent psychiatry, changes in clinical practice have, by far, outpaced the emergence of research data and clinical decisions are frequently not guided by a scientific knowledge base.” (Vitiello, B. et. al., JAACAP, 38(5), p.501, May 1999)

Parental Influences:

- Buy into notion of a “quick fix”
- Absolves parents of responsibility but can also handicap change at the family system level
- Parents want to believe biology is to “blame” versus parenting styles that may inadvertently contribute to sustaining illness
- Or, conversely, parents take too much responsibility for their child’s illness and are scared/reluctant to use medication.

Lack of Safety and Efficacy Studies of Psychotropic Medications for Children:

- Brain continues to develop into early adulthood
- Impact of adding psychoactive medications to a developing brain remains unknown

Lack of Safety and Efficacy Studies of Psychotropic Medications for Children:

- Other medications that were safe for use in adults that had unanticipated side-effects for children:
 - Tetracycline > dental discoloration
 - SSRI's > suicidality
 - Aspirin > Reye's syndrome

Lack of Safety and Efficacy Studies of Psychotropic Medications for Children:

- Medications are developed privately by Pharmaceutical companies
- FDA requires safety and efficacy studies for *target population* only
- FDA guidelines do not limit prescribing practice

Lack of Safety and Efficacy Studies of Psychotropic Medications for Children:

- Research on children is complicated and costly
- Federal government efforts at rectifying situation

Selection of Medication

- Target symptoms
- Standard of care/ Evidence-based
- Least risk of serious side effects
- FDA approval
- Known previous responses of patient
- Known previous responses of family members
- Dosing schedule
- Clinician preference

OBTAIN CONSULTATION

Monitoring of medications:

- Start low and go slow
- Generally continue raising dose until:
 - Satisfactory remission of symptoms
 - Reach upper limit of dose
 - Side effects that make dosing intolerable
 - Plateau in symptoms or worsening with increase in dose

Monitoring of medications:

- Monitoring of target symptoms: rating forms, collateral information
- Monitoring of serum levels – TCA's, Lithium, Anticonvulsants
- Monitoring of other physical assessments:
 - Height/weight, P, BP, tics (stimulants)
 - Liver function, blood count (anticonvulsants)
 - Fasting blood sugar, lipids, weight, abnormal movements (antipsychotics)
- Medication 'holidays' and discussion of taking off medications (wean)

Medication Monitoring Guidelines: Follow-Up

- Children on Psychotropic medications should be seen by their prescribing clinician no less than once every three months. Children in acute settings, displaying unsafe behavior, experiencing significant side-effects, or not responding to a medication trial or in an active phase of a medication trial should be seen more frequently.

Medications in Children

- Should be used with caution and respect, but can deliver significant relief from symptoms and put children back on their developmental trajectory.
- Though we have little information about long-term effects on brain development (positive or negative), we do know that untreated diseases get worse as they progress, and that disrupted development has long-term consequences as well.

Medication Classification

- Anti-depressants
- Mood Stabilizers/Anticonvulsants
- Anti-psychotics
- ✓ Traditional
- ✓ Second Generation
- Anxiolytics
- Sleep Agents/Hypnotics
- Stimulants



Antidepressants



- Common antidepressants
SSRIs, atypical antidepressants, TCA, MAOIs
- SSRI's are the most widely used anti-depressant in children (see next slide.)
- Clinical concerns: Antidepressants and suicidal ideation; Precipitation of Mania

Why SSRI's are of interest to Child Psychiatrists

- Most studies have shown tricyclic anti-depressants to be ineffective in treating childhood depression.
- There have been several reports of sudden death in children treated with tricyclics.
- Side effects of SSRI's generally more tolerable than those of tricyclics and MAOI's.
- SSRI's may be administered once daily.
- They have the potential to treat a spectrum of childhood disorders (OCD, Tourette's, anxiety disorders, selective mutism, PTSD, eating disorders).

FDA indications of SSRI's

- Fluoxetine
 - Ages 7-17 for OCD and **depression**
- Escitalopram
 - Ages 12 and older for depression
- Fluvoxamine
 - OCD in patients eight or older
- Sertraline
 - OCD in patients six or older

SSRI side effects

- Gastrointestinal side effects (nausea, diarrhea, decreased appetite)
- Headaches
- Insomnia or sedation
- Serotonin syndrome (nausea, tremor, hyperthermia, rigidity, tremor, seizure)
- Sexual dysfunction (delayed ejaculation, anorgasmia, decreased libido)
- Discontinuation syndrome (dizziness, nausea, lethargy, irritability)
- Mania
- Restlessness (akathisia or agitation)
- Miscellaneous side effects: sweating, anxiety, dizziness, tremors, fatigue, dry mouth.

Atypical Antidepressants

- Wellbutrin, Wellbutrin SR, Wellbutrin XL, Zyban (bupropion)
- Effexor, Effexor XR (venlafaxine)
- Cymbalta (duloxetine)
- Desyrel (trazadone)
- Remeron (mirtazapine)

Side effects

Atypical Antidepressants

- Wellbutrin-insomnia, CNS stimulation, headache, constipation, dry mouth, nausea, tremor, seizure (rare)
- Desyrel-sedation, weight gain, hypotension, dry mouth, priapism
- Effexor-hypertension, insomnia, anxiety, nausea, sweating, dizziness, high incidence of discontinuation syndrome
- Remeron-increased appetite, sedation, dry mouth, constipation

Mood Stabilizers / Anticonvulsants

- Common mood stabilizers

Lithium*

Depakote (Valproic Acid)*

Lamotrigine

Tegretol

Trileptal

- Alternatives to traditional mood stabilizers



Mood stabilizers / Anticonvulsants

General principles:

Screening labs (CBC, chemistry panel, TFTs, LFTs, pregnancy test)

Follow levels (particularly for Depakote, Lithium, Tegretol) for therapeutic level and for evaluating toxicity

How to Choose a Mood Stabilizer

- Use algorithm from AACAP Treatment Guidelines
- Consider side effect profile/ease of use vs. research data (Current trend towards prescribing antipsychotics as first-line mood stabilizer despite more data for Lithium and Depakote)
- Involve the family in the discussion and choice.
- For bipolar disorder, you may be forced to use multiple medications.

Mood Stabilizers

Lithobid, Eskalith, Lithonate, Eskalith CR (lithium)

- Baseline labs important (chemistry panel, TFTs, CBC, pregnancy test)
- May act by blocking inositol-1-phosphatase in neurons?
- Renal excretion
- Capsule and liquid form (lithium citrate syrup)
- Follow lithium levels (range 0.8-1.2mEq/L); dangerous if toxic levels
- Therapeutic effect may take weeks(4-6 weeks on average)
- The only medication in all of psychiatry which has been proven to reduce suicidality.

Lithium Side Effects

- GI distress (nausea, vomiting), weight gain, fine tremor, cognitive impairment (“fuzzy thinking”).
- Polyuria with polydipsia (20% of patients)
- Hypothyroidism (monitor TSH a few times a year)
- Cardiovascular
- Dermatological (acne, rash, psoriasis)
- Hematologic (leukocytosis—elevated white count)
- Neurologic—muscles weakness, slurred speech, headache

Lithium toxicity

- Can be caused by: decreased fluid intake, increased fluid loss (sweating excessively/diuretics), reduced salt intake, medications that act on the renal system (NSAIDS/ACE inhibitors), taking too much Lithium!
- Symptoms: GI (nausea, vomiting, diarrhea), **coarse** tremor, ataxia, slurred speech, confusion, arrhythmias.
- Can check blood levels: Mild to moderate toxicity (1.5-2.0mEq/L). Severe toxicity (>2.5mEq/L). Death may occur (>4mEq/L). Treatment may involve stopping lithium, hydration, and hemodialysis.

Mood stabilizers / Anticonvulsants

- Depakote, Depakene (valproic acid), Depakote ER
 - Capsules, oral suspension, tablets
 - Avoid in patients with hepatic (liver) disease
 - Screening labs (CBC, LFTs, pregnancy test)
 - Check serum levels 7 days after first dose, then continue to monitor
 - Therapeutic effect 2-4 weeks
 - Side effects: sedation, dizziness, nausea, vomiting, abnormal LFTs.
 - Other rarer side effects: hepatitis, pancreatitis, hematological, dermatological, neurological.

Mood Stabilizers / Anticonvulsants- others

- Lamictal (lamotrigine)-safe(r) in pregnancy, rash
- Tegretol (carbamazepine)-affects blood count
- Trileptal (oxcarbazepine)-better tolerated than Tegretol, may not be as effective
- Topamax (topiramate)*-not used for bipolar disorder
- Alternatives to traditional mood stabilizers are second generation antipsychotics (SGAs)

Justifiable uses of antipsychotics in children

- Childhood Schizophrenia
- Childhood Bipolar Disorder
- Autistic Spectrum Disorders
- Tourette's Disorder
- Substance Induced Psychosis

Atypical Antipsychotics

- Aripiprazole 5-30 mg/day
- Olanzapine 5-20 mg/day
- Quetiapine 25-400 mg/day in divided doses
- Risperidone 0.5-6 mg/day (available in oral solution)
- Ziprasidone 20-160 mg/day in divided doses with food

Anti-psychotics—2nd generation

Side effects

- Abilify (aripiprazole): GI effects, headache, sedation (higher dosages).
- Geodon (ziprasidone): cardiac effects (caution in those with cardiac history), dizziness, nausea, sedation (IM).
- Zyprexa, Zydys (olanzapine): metabolic syndrome, **weight gain**, dry mouth, akathisia, insomnia, GI effects, tremor, lightheadedness.
- Seroquel (quetiapine): sedation, metabolic syndrome, weight gain, orthostatic hypotension, GI effects, and dry mouth.
- Risperdal (risperidone): orthostatic hypotension, weight gain, elevated prolactin levels.
- Clozaril (clozapine): hematological changes (agranulocytosis), orthostatic hypotension, sedation, constipation, hyperthermia, hypersalivation, seizure (higher dosages), myocarditis.

Medical Urgencies/Emergencies associated with anti-psychotics

- Parkinsonianism
- Acute dystonia
- Acute akathisia
- Tardive dyskinesia (TD)
- Neuroleptic malignant syndrome (NMS)

Psychostimulants

- Indications
- Is it ADHD or Bipolar Affective Disorder?
- Types of stimulants (controlled substances)
Ritalin, Metadate, Focalin, Adderall, Concerta
- Alternative medications used for ADHD



Psychostimulants

- Ritalin, Ritalin SR, Ritalin LA, Metadate CD, Metadate ER, Concerta, Focalin, Methylin, Methylin ER (methylphenidate)
- Adderall, Adderall XR (dextroamphetamine, amphetamine)

Alternative medications used for ADHD

- Catapres, Catapres-TTS (clonidine)
- Tenex (guanfacine)
- Strattera (atomoxetine)
- Wellbutrin (bupropion)
- +/-Provigil (modafinil)-newer drug for narcolepsy/excessive daytime sleepiness might be helpful as an adjunct for ADHD

Anxiolytics



- Generally avoid benzodiazepines
- Types of benzodiazepines

Ativan (lorazepam)

Valium (diazepam)

Xanax (alprazolam)

Librium (chlordiazepoxide)

Klonopin (clonazepam)

- Address underlying cause-short term or long term
- Long term anxiety (SSRIs)
- Can use Tenex or Clonidine for early anxiety, but may need to switch to SSRI long term

Sleep Agents/Hypnotics

- Assess why difficult to sleep
- Start with medications with low side effects/interaction potential
e.g. Benadryl or Atarax
- Consider Clonidine
- Remeron, Trazadone, Restoril
- Melatonin



The unofficial rules

Rule #1 : SAFETY and EFFICACY

- Rough hierarchy of the track record of safety/efficacy:
 - Stimulants > SSRI' s > mood stabilizers > antipsychotics

Unofficial rule #2

Rule #2: MONOPHARMACY is better than
POLYPHARMACY

- One medicine is better/ safer than two medicines
- Two medicines is better/ safer than three medicines
- Three medicines is better/ safer than four medicines
- And so forth

Unofficial Rule #3

Rule #3: Although FDA approval isn't necessarily the final word, pay attention to different categories:

- FDA-approved for treating children/adolescents with the condition;
- FDA-approved for treating adults with the condition but also approved for treating children/adolescents with a different condition;
- FDA-approved for treating adults the condition (and with some evidence for safety/efficacy in children with the condition);
- Not FDA-approved either for the condition you're treating

Unofficial rule #4

Rule #4: DOCUMENT, DOCUMENT, DOCUMENT

- Document your reasons for prescribing the medication.
- Obtain informed consent.
- OR RECEIVE A VISIT FROM YOUR FRIENDLY NEIGHBORHOOD MALPRACTICE ATTORNEY

Rule #5

It is always more than just
medications.

Questions?

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