A Brief Overview of Psychiatric Pharmacotherapy

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Disclosures

• Some medications discussed are not approved by the FDA for use in the *population* discussed/described.

• Some medications discussed are not approved by the FDA for use in the *manner* discussed/described.

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Caveat Regarding the Role of Medication…
Neuroscience Overview


Neuroscience Overview

Source: National Institute on Drug Abuse
Common Diagnoses and Associated Medications

- **Psychotic Disorders**
  - Antipsychotics

- **Bipolar Disorders**
  - Mood Stabilizers, Antipsychotics, & Antidepressants

- **Depressive Disorders**
  - Antidepressants

- **Anxiety Disorders**
  - Antidepressants & Anxiolytics

- **Attention Deficit Hyperactivity Disorder**
  - Stimulants, Antidepressants, $\alpha_2$-Adrenergic Agents, & Strattera
Classes of Medications

• **Anti-depressants**
• Stimulants and non-stimulant alternatives
• Anti-psychotics (a.k.a. neuroleptics)
Antidepressants

- **Method of Action:**
  - Modify neurotransmitter levels
  - One mechanism: “reuptake inhibition”
  - Block action of cell structures that re-capture neurotransmitters after they are initially released

- **Key Neurotransmitters:**
  - Serotonin (5-HT)
  - Norepinephrine (NE)
  - Dopamine (D)

- The Black Box
The Serotonin Neuron

Source: National Institute on Drug Abuse.
Antidepressants

- **SSRI** – *selective serotonin reuptake inhibitors*
- **SNRI** – *serotonin norepinephrine reuptake inhibitors*
- **Others** – Wellbutrin®, Remeron®, Trazodone®
- **TCA** – *tricyclic antidepressants*
- **MAOI** – *monoamine oxidase inhibitors*
Antidepressants: SSRIs

- fluoxetine (Prozac®, Prozac Weekly®)
- sertraline (Zoloft®)
- paroxetine (Paxil®, Paxil CR®)
- citalopram (Celexa®, escitalopram (Lexapro®))
- vilazodone* (Vibriid®)
- vortioxetine* (Brintellix®)
- ↑ serotonin levels
- S/E: sexual side effects, sleep disturbance, weight gain, suicidality

* Additional receptor activity as well.
Antidepressants: SNRIs

- venlafaxine (Effexor®, Effexor XR®)
- desvenlafaxine (Pristiq®)
- duloxetine (Cymbalta®)
- levomilnacipran (Fetzima®)
- ↑ serotonin and norepinephrine levels
- S/E: significant withdrawal, hypertension, suicidality
Antidepressants: Others

• **Bupropion** *(Wellbutrin SR®, Wellbutrin XL®, Forvio XL®)*
  – Increases dopamine, norepinephrine, and serotonin
  – S/E: rash, ↓ seizure threshold, suicidality

• **mirtazapine** *(Remeron®, Remeron SolTab®)*
  – Increases norepinephrine and serotonin
  – S/E: weight gain, sedation, suicidality

• **trazodone** *(Desyrel®)*
  – S/E: sedation, orthostasis, priapism, suicidality
Antidepressants: The Black Box Warning (≤24 yoa)

• Antidepressants (can) increase risk of suicidality
• Must balance risks and benefits in prescribing
• Monitoring
  – Physician
  – Family and patient
• Dispense smaller quantities
• Clarify off-label use of medication
Classes of Medications

- Anti-depressants
- **Stimulants and non-stimulant alternatives**
- Anti-psychotics (a.k.a. neuroleptics)
Stimulants

• ↑ Dopamine levels
• DEA Schedule II
• Users can develop dependence
• Abuse is possible
• Both short- and long-acting formulations
• Highly effective for ADHD
• Potential Side Effects
  – ↓ appetite, weight loss, insomnia, tics
Stimulants: Methylphenidates

• **methylphenidate**
  – Ritalin®, Ritalin SR®, Ritalin LA®, Daytrana® (patch)
  – Concerta®, Metadate ER®, Metadate CD®

• **dexmethylphenidate**
  – Focalin®, Focalin XR®
Stimulants: Amphetamines

• **dextroamphetamine**
  – Dexedrine®, Dexedrine SR®

• **mixed amphetamine salts**
  – Adderall®, Adderall XR®

• **lisdexamfetamine dimesylate**
  – Vyvanse® (pro-drug technology)
Non-Stimulant ADHD Medications

• **atomoxetine (Strattera®)**
  – Norepinephrine reuptake inhibitor
  – ↑ norepinephrine levels
  – S/E: GI upset, liver problems, mood swings, suicidality
  – Common Doses: 10mg-100mg

• **α₂-Adrenergic Agonists**
  – clonidine (Catapres®, Catapres-TTS®)
  – guanfacine (Tenex®, Intuniv®)
  – ↓ sympathetic nervous system activity
  – S/E: orthostasis, hypotension

Caveat re: “Common Doses”: These are illustrative only and are not population, diagnosis or formulation specific. These ranges may include doses not approved by the FDA.
Classes of Medications

- Anti-depressants
- Stimulants and non-stimulant alternatives
- **Anti-psychotics (a.k.a. neuroleptics)**
Antipsychotics

• Mechanism of Action
  – Block Dopamine D$_2$ Receptor
  – May block or activate other receptors as well
    • 1$^{\text{st}}$ generation (typical): dopamine
    • 2$^{\text{nd}}$ generation (atypical): dopamine, serotonin, antihistamine

• Class Side Effects
  – $\uparrow$ weight, $\uparrow$ glucose, dyslipidemia
  – Possible tardive dyskinesia
Source: National Institute on Drug Abuse
Antipsychotics: First Generation (Typical)

- chlorpromazine (Thorazine®)
- haloperidol (Haldol®)
- fluphenazine (Prolixin®)
- perphenazine (Trilafon®)
- thioridazine (Mellaril®)
- trifluoperazine (Stelazine®)

Formulations: pills, IM, IV, LAI (long acting injectable)
Antipsychotics: Second Generation (Atypical)

- **clozapine (Clozaril®)**
  - Formulation: pills, dissolvable tabs (FazaClo®)
  - S/E: agranulocytosis, seizure, myocarditis

- **risperidone (Risperdal®)**
  - Formulation: pills, dissolvable (M-tab®), elixir, LAI (Consta®)
  - S/E: ↑ prolactin ≈ galactorrhea/gynecomastia, EPS

- **paliperidone (Invega®)**
  - Formulation: delayed release capsule, LAI (Sustenna®)
  - S/E: similar to risperidone

- **quetiapine (Seroquel®, Seroquel XR®)**
  - Formulation: pills
  - S/E: sedation
Antipsychotics: Second Generation (Atypical)

- **olanzapine (Zyprexa®)**
  - Formulation: pills, dissolvable (Zydis®), IM injection, LAI (Relprevv®)
  - S/E: weight gain, metabolic syndrome

- **ziprasidone (Geodon®)**
  - Formulation: pills, IM injection
  - S/E: cardiac conduction delay, EPS, akathisia

- **aripiprazole (Abilify®)**
  - Formulation: pills, elixir, dissolvable (Discmelt®), IM injection, LAI (Maintena®)
  - S/E: akathisia
Antipsychotics: Second Generation (Atypical)

• **asenapine (Saphris®)**
  – Formulation: dissolvable tablets
  – S/E: sedation

• **iloperidone (Fanapt®)**
  – Formulation: pills
  – S/E: weight gain

• **lurasidone (Latuda®)**
  – Formulation: pills
  – S/E: EPS
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Questions?