

Brief Overview of Common Psychotropic Medications:
A Practical Guide from a Clinical Viewpoint

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MEDICATIONS FOR MOOD DISORDERS

SSRI Antidepressants- Use; Depressive and anxious disorders including Dysthymia, Major Depression, Panic Disorder, Generalized Anxiety Disorder, Obsessive Compulsive Disorder, Posttraumatic Stress Disorder, Separation Anxiety Disorder, Selective Mutism

Mechanism of Action; Increased serotonin at brain neurons by blocking serotonin reuptake, long-term probably affect receptor numbers and distribution. Dosage unrelated to body weight.

Side-Effects (most common to all)-nausea, decreased appetite weight loss, excessive sweating, insomnia, jitteriness, sedation, dizziness, sexual dysfunction. Note: The serotonergic syndrome is a medical emergency involving muscle jerking, tremor, high blood pressure, diarrhea and confusion due to drug interactions primarily with older antidepressants or similar drugs known as monoamine oxidase inhibitors.

1. Prozac (fluoxetine)-typically “activating”, available in liquid form. Dosage(child),2.5-40 mg/d .
2. Paxil (paroxetine)-typically “sedating”, available in liquid form. Has an associated “withdrawal” syndrome with abrupt discontinuation. Dosage (child),2.5-40 mg/d.
3. Zoloft (sertraline)-usually neither sedating or activating. Has milder “withdrawal” syndrome with abrupt discontinuation. Dosage (child), 12.5-150 mg/d.
4. Celexa (citalopram)-usually neither sedating or activating. Extensive use in Europe during the development of Prozac market in the US. Advantage in few drug interactions, very good choice for medically ill children on multiple medications. Available as a liquid, dosage (child) 2.5-40.
5. Luvox (fluvoxamine)-Can be very sedating in children. Originally approved for obsessive compulsive disorder and the public frequent will present with the misconception that this medication is better than the other SSRI's for this indication.
6. Remeron (mirtazapine)-can be used as sleep aid at lower doses. Most frequent complaint is weight gain. Not used very often in children, dosage 7.5-15 mg/d.

Miscellaneous Antidepressants

1. Wellbutrin/Zyban (Bupropion)-also used for ADHD, smoking cessation and mood difficulties particularly in Bipolar patients. May also be used to “augment” the action of other antidepressants. Mechanism of action involves increasing dopamine and norepinephrine turnover in the brain. Typical doses for children are between 100-200 mg/twice a day. Wellbutrin is not often used in young children, more frequently adolescents due to side effects including, agitation, insomnia, wt loss, constipation and tremor. More problematic in the increased risk for seizures in those with a seizure disorder, less risk with the slow-release form.
2. Effexor (Venlafaxine)-some believe may be helpful in ADHD and depression. Considered activating. Often used after other antidepressants fail. Mechanism of action also involves increased norepinephrine reuptake blockade as well as serotonin reuptake blockade. Typical dosage of extended-release form for children would be 25-225 mg/day. At higher doses risk of elevated diastolic blood pressure that may become an issue in adolescent girls also on birth control pills.
3. Tricyclic acid antidepressants (TCA) including Tofranil (imipramine), Pamelor(nortriptyline), Anafranil (clomipramine), Elavil (amitriptyline)-use in children for ADHD is less common than in recent past due to concerns for toxicity. TCA’s are also used for headache prevention and pain syndromes. No really good “gold standard” studies showing effectiveness with depression/anxiety in kids. These medications have largely been replaced by the SSRI’s for treatment of depressive and anxiety disorders including Obsessive-Compulsive Disorder and PTSD. Anafranil, however, may be used for Obsessive Compulsive Disorder in children with comorbid ADHD. Tofranil is approved for bedwetting. Doses vary for each TCA and some can be measured for actual blood levels. Side-effects for these medications are numerous and include anticholinergic effects (dry mouth, blurred vision, constipation, difficulties with urination, fast heart rate, delirium and seizures), antihistamine effects (sleepiness, weight gain), alpha-1-receptor blockade (positional dizziness/BP changes) and cardiac effects (slowed conduction through heart’s electrical system). Sudden death has been reported in children taking both TCA’s and stimulants. Baseline and frequent EKG monitoring are necessary when taking these medicines.
4. Monoamine Oxidase Inhibitors (MAOI)including), Nardil (phenylzine), Marplan (isocarboxazid) and Parnate (tranylcypromine). Rarely used medications due to dietary restriction. Never used with SSRI since may precipitate a serotonergic crisis.
5. Desyrel (trazadone) Older antidepressant with sedation as a prominent side effect now used to treat insomnia. Mechanism of action involves blocking serotonin reuptake, alpha-1-adrenergic blockade and antihistamine action. Dosage is variable and generally adjusted to effect. In children may be used in younger ages even preschool/early graded, the developmentally delayed and/or autistic population for hyperactivity, impulsivity or sleep disturbance. Doses typically are around 12.5-50

mg up to three times per day. Some children, particularly in the DD population may be on very high doses of this medication. Worrisome side-effects are related to alpha-1-adrenergic blockade and include cardiac arrhythmias, positional low blood pressure, dry mouth, headache, constipation, priapism=prolonged erection-REQUIRES EMERGENCY MEDICAL INTERVENTION.

Mood Stabilizers-Use; Bipolar Affective Disorder (manic-depression), Aggression and Impulsivity. Not typically used for primary psychotic disorders unless there is suspicion of a mood component, ie. Schizoaffective Disorder. Some of these medications are also used by neurologists for seizure disorders.

1. Depakote (Valproic Acid)-Currently thought to be the best choice for Bipolar patients with “mixed states” and rapid-cycling. Bipolar children are frequently in these categories. Depakote is also used for migraine prevention. Typical dosages are based on weight up to about 20mg/kg/day. Doses are frequently divided into two or three times daily dosing. Blood chemistries and levels are obtained on a regular basis when using this medication due to the potentially serious life-threatening side-effects of liver and pancreatic damage as well as blood disorders. Side-effects are numerous and include sedation, dizziness, weight gain and hair loss.
2. Tegretol (Carbamazepine)- Similar indications as above except may be more frequently used for pain conditions and less for headache. Typical doses at about 10 mg/kg/day are also divided by two to four dosing intervals/day. Has a very popular use for aggression and rage in children and some adults. Blood monitoring is necessary for levels as well as potentially fatal agranulocytosis/aplastic anemia and liver failure.
3. Eskalith (Lithium carbonate)-similar indications as above except thought to be the drug of choice for the treatment of acute mania especially in “classic” bipolar patients. Also needs frequent blood monitoring for levels and indicators of toxicity. Toxicity also includes thyroid/kidney concern, primarily long term. Also increased drinking and urination.
4. Miscellaneous Mood Stabilizers include Lamictal (lamotrigine) and Topamax (topiramate). There is some emerging evidence that Lamictal might be helpful in Bipolar depressions.

MEDICATIONS FOR ANXIETY DISORDERS

SSRI Antidepressants, Use/mechanism and SE as previously indicated. For anxiety disorders used in the long-term management of Generalized Anxiety Disorder, Panic Disorder, Obsessive-Compulsive Disorder, Post-traumatic Stress Disorder, Separation Anxiety Disorder, Selective Mutism, anxiety associated with Eating Disorders. Note the

use of these medications for anxiety or depression require a “lag period” of at least three weeks until effective for symptom relief. Dosage is roughly equivalent to those used to treat depressive illness except for the treatment of Obsessive-Compulsive Disorder which typically requires much higher dosages. Moreover, because these patients tend to be more “somatically preoccupied” it may be necessary to start at very small dosages to avoid even minimal side-effects.

Tricyclic Acids-same general comments as above. May be used as a first line medications by clinicians that wish to take advantage of the sedative and anticholinergic side-effects or to treat co-morbid conditions such as headache or irritable bowel syndrome.

Anxiolytics-medications that for the most part alleviate anxious symptoms soon after ingestion. Benzodiazapines (BDZs) are DEA Schedule IV controlled substances indicating that these agents have limited dependence liability and less abuse potential than other addictive drugs such as cocaine, LSD, amphetamines, opiates or barbituates. Use; practical use of these medications is confined to judicious and cautious application in the early stages of an “anxious depression”, Bipolar Affective Disorder, Panic Disorder, Social Phobia and possibly Posttraumatic Stress Disorder, treatment of anxiety associated with psychosis or delirium. SSRI’s and exposure/cognitive behavioral therapy is currently the preferred treatment for most anxiety disorders. Benzodiazapines are also used for convulsive disorders (Valium/diazepam, Klonopin/clonazepam), muscle spasms (Valium), preoperative sedation (Versed/midazolam) and for induction of general anesthesia. Benzodiazapines mechanism of action involves interaction with the GABA receptor, near to the same site as alcohol. For this reason, benzodiazapines are used for detoxification of alcohol dependent individuals to prevent potentially fatal withdrawal seizures. In general, BDZ’s are contraindicated for the treatment of anxiety in individuals with substance related issues due to their potential for BDZ abuse as well triggering cravings for other substances. Similar to alcohol, BDZ’s can “disinhibit” patients resulting in increased aggression. Disinhibition is also common in children when using these medications.

Miscellaneous Medications Used to Treat Anxiety Disorders

1. Buspirone-used most frequently to treat mild-moderate, Generalized Anxiety Disorder. May also be used as an “augmentation” strategy with an SSRI.
2. Propranolol-called a beta-blocker of blood pressure medication used primarily for performance anxiety.
3. Neurontin(gabapentin)-some belief that this medication may be effective in social phobia because of interaction with the GABA receptor.

MEDICATIONS FOR PSYCHOTIC DISORDERS

Antipsychotics, typical/atypical. Use; to treat psychotic symptoms in mood disorders, schizophrenic spectrum illnesses, impulse control difficulties and perseveration in Pervasive Developmental Disorders and mental retardation, Tourette's disorder and delirium. Sometimes used in other disorders where a "quasi-psychotic" process is suspected, considered off-label use.

Atypical antipsychotics (grouped together because of the decreased tendency to cause extrapyramidal symptoms (EPS), ie. muscle stiffness, agitation, tardive dyskinesia, and dystonia. These medications are also preferred to the typical antipsychotics since they are more effective in treating the negative symptoms of schizophrenia. In general, the mechanism of action of the atypical antipsychotics reflects for the most part decreased dopamine blockade in specific brain regions and a tendency for enhanced serotonergic activity.

1. Risperdal (risperdone)-most likely to cause EPS due to interactions with D2 receptors, especially in muscular African-American males. Dosage range from 0.25-6 mg/day. Side-effects include agitation, anxiety, heart conduction abnormalities and headache. Increased prolactin may result in nipple enlargement and discharge regardless of sex.
2. Zyprexa (olanzapine)-most likely to cause significant weight gain that is not dependent on dosage. Similar indications as Risperdal, frequently used as an adjunctive medicine with psychotic mood disorders. Dosages typically 2.5-20 mg/d. Side effects include dry mouth, constipation and possible aggravation of diabetes mellitus.
3. Seroquel (quetiapine)-very sedating, but fewer anticholinergic side-effects. Dosages typically start at 50 mg in the pm up to 300 mg at bedtime.
4. Geodon, newest on the market since about August, 2000. Looks promising for schizoaffective disorder, company now recommending greater efficacy at higher dosages than originally suggested.
5. Clozaril (Clozapine)-very sedating, but thought to have nil risk for causing or contributing to tardive dyskinesia. This medication often used to treat psychosis after three failed attempts with other antipsychotics to control symptoms. Most feared side-effect related to agranulocytosis (decreased white blood cells). Initially needs weekly monitoring for blood cell counts then every two weeks. Also carries a risk for lowering seizure threshold and increasing heart rate. Patients may complain of drooling.

Typical antipsychotics-these medications are thought to treat the positive symptoms of schizophrenia as well as the newer atypical antipsychotics. The mechanism of action involves many brain receptors but these medications are typically associated with the blockage of dopamine or D2 receptors. These medications are still used especially in acute hospital settings although becoming less preferred for the long-term treatment of psychosis due to increased cumulative risk for the development of tardive dyskinesia. For the most part, the typical antipsychotics are not thought to have mood stabilizing properties but may be adjunctively in the initial treatment of mood disorders and even bipolar disorder when mood symptoms are accompanied by psychosis. Other indications include Tourette's disorder, impulsivity/aggression, and agitation in delirium. Typical antipsychotic medications such as Haldol (haloperidol) or Thorazine (chlorpromazine) have the added advantage of being available in an intravenous or intramuscular form unlike any other atypical or typical antipsychotics. Moreover, Haldol and Prolixin (fluphenazine) are available in long acting depot (IM) storage forms that allow psychiatrists to dose on a every two week or monthly basis.. Storage forms of these medications are particularly helpful for noncompliant psychotic patients. These medications have cardiac, dermatological, endocrinological, blood, sexual and neurological side-effects. As a group the typical antipsychotics have historically been classified according to potency and anticholinergic side-effects. Typically high potency refers a lower dose to effectively treat positive symptoms compared to lower potency drugs. Anticholinergic side effects are related to blood pressure changes or dizziness, constipation and decreased secretions. In general the relationship between these two effects is inverse.

1. **High Potency**-examples, Haldol, Navane (thiothixene), Prolixin (fluphenazine), Stelazine(trifluoperazine)
2. **Mid Potency**-examples, Loxitane (loxipine), Moban (molindone)
3. **Low Potency**- examples, Thorazine (chlorpromazine), Serenil (mesoridazine), Mellaril (thioridazine)

IMPULSE CONTROL DISORDERS

Stimulants-Use; Attention Deficit Hyperactivity Disorder, narcolepsy, augmentation of narcotics for pain relief. Mechanism of action-increase dopamine and norepinephrine levels in the brain, postulated to occur at frontal(inhibitory) sites. Side-effects (most common to all) include appetite suppression, suspension in growth, dizziness, anxiety, dysphoria, irritability and occasionally headache. "Rebound" syndrome includes fatigue, excessive sleepiness, increased appetite, dysphoria and depression. These medications are DEA schedule II drugs indicating a high likelihood for abuse.

1. Ritalin, Ritalin SR, Concerta (methylphenidate)-typically used at doses not exceeding 1 mg/dg/day.

2. Adderall, Dexedrine (dextroamphetamines)-typically used at doses not exceeding 0.5 mg/kg/d.
3. Cylert (pemoline)-typically used at doses up to 2-3 mg/kg/d. Note: not usually a first choice due to documented liver toxicity.

Miscellaneous-Use; Attention Deficit Hyperactivity Disorder, Disruptive Behavioral Disorder, NOS, Posttraumatic Stress Disorder, Sleep disturbance. Vary in their mechanism of action and side-effect profile, see below.

1. Catapres (clonidine)-also used to treat hypertension and Tourette's syndrome; mechanism of action is somewhat generalized, called an alpha-2-adrenergic agonist, the end result is to decrease norepinephrine in the brain (and elsewhere). Typically initial dosing is done even more carefully than for other medications due to blood pressure effects. Likewise, patients need to be carefully tapered off (no abrupt discontinuation) due to rebound effect on blood pressure. Typical dose for kids would be 0.05-0.1 mg, three times/day. Also comes in a patch, not used much due to skin irritation. Side effects include, sedation, dry mouth/eyes, BP change/dizziness, nausea, depression, vivid dreams, cardiac effects. Recent evidence suggest concerns when used with Ritalin.
2. Tenex (guanifeson)-In addition to ADHD, Also used to treat tic disorders and sleep disorders. The mechanism of action is thought to be more specific for the alpha-2A-adrenergic receptor resulting in less sedation and difficulties with mood. Consequently, it is also less likely to be effective in treating aggression compared to Catapres. Dosage is typically 0.5-1 mg once or twice per day. Side-effects are similar to Catapres.
3. Trazadone (Desyrel)-may be used in younger, preschool/early grades, the developmentally delayed and/or autistic population for hyperactivity, impulsivity and sleep disturbance. Dosage is variable and generally adjusted to effect-decreased activity, not daytime sedation.
4. Tricyclic antidepressants-used in children for ADHD although less common than in the past due to concerns regarding particularly cardiac toxicity as previously mentioned. Tofranil (imipramine) is also used for bedwetting problems in children.