Psychotropic Medications
(What consumers, caregivers and staff should know)

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Objectives

- Identify the different categories of medications used to treat mental illness
- Understand general risks and benefits of psychotropic medications
- Recognize other non-medication treatments of mental illness
What this presentation is not...

- An exhaustive review of psychotropic medication
- Advice on individual treatment of conditions
- An overview on “shared decision-making” (that is for another day!)
Psychotropic Medications

- They have potentially great benefits
- They can have troublesome side effects

I will be mentioning many, but not all of these...
Why use medications?

- They are approved for treating certain conditions; the approval for is called “an indication.”

- Many of the psychotropic medications have been prescribed based on assumptions of “neurotransmitter” theories (chemicals in the brain known to be associated with emotions, behaviors, such as dopamine, serotonin, etc…). However, it is still assumption based.

- Our understanding of why medications work, and the risks and benefits involved continue to evolve. Everything we do (including non-medication treatment of conditions) should be weighed through risks, benefits and
An important reminder

- There are many therapies that are as/more effective for certain conditions than medication.
- Depending on severity, often times therapy and medication are more effective than either alone.
- Bottom line-don’t forget to ask about therapy, such as cognitive-behavioral therapy, especially for depression and anxiety disorders.
The synapse

1. Incoming electrical signal
2. Neurotransmitters
3. Vesicles
4. Neurotransmitter in receptor
5. Synaptic gap
6. Chlorine ion
7. Sodium ion
8. Transmitted signal
9. Reuptake port
10. Auto receptor

Potassium ion
Indications

- Medications are used for specific FDA (Food and Drug Administration) approved indications with specific dose recommendations.

- Many medications are used “Off Label,” either for other indications or at doses not recommended by the FDA. This does not necessarily mean this is unsafe.

- When the FDA has reasonable evidence of an association between medication and a serious health hazard, they may require a “black box warning” on the prescribing label.
Questions to ask

What is the condition for which this medication is being prescribed?
Are there non-medication treatments for this condition?
What are the main side-effects to watch for with this med?
How soon will we see improvement?
What’s the duration of treatment?
Are there any labs or tests needed when using this med?
What’s the potential interaction with my other medications?
Who informs the healthcare decision-maker (if it is not the client)?
Pharmacokinetics
(a fancy term for how the body effects the medication taken...)

- **Administration**—(is it taken by mouth, by injection, etc...?)
- **Absorption**—(often depends on how taken)
- **Time of effect**—(not necessarily the time of positive benefit...)
- **Metabolism*—(how the med is broken down to be eliminated by the body)
- **Half-life**—(how long it takes for half a dose of medication to be broken down and leave the body) Example: “the half-life of medication “y” is 5 hours...”
- **Steady state**—when the rate of drug input and elimination are the same (roughly 4 to 5 half-lives)
- **Elimination**—the removal of the drug (either broken down, or not)
Types of Psychotropic Medications

- Antidepressants
- Mood Stabilizers
- Antipsychotic meds (neuroleptics)
- Anxiolytics/Hypnotics
- ADHD meds

- Meds used in the treatment of addictions
- Meds used in the treatment of Alzheimer’s disease
- Miscellaneous
Types of Psychotropic Medications

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**Major Depressive Disorder—Diagnostic Criteria**

Five or more of the following symptoms are present most of the day, nearly every day, during a period of at least 2 consecutive weeks:

**At least 1 of these 2 symptoms**

1. Depressed mood
2. Loss of interest or pleasure in all, or almost all, usual activities

3. Significant weight loss when not dieting, or weight gain
4. Insomnia or hypersomnia
5. Psychomotor agitation or retardation
6. Fatigue or loss of energy
7. Feelings of worthlessness or excessive or inappropriate guilt
8. Diminished ability to think or concentrate or indecisiveness
9. Recurrent thoughts of death or suicide

Symptoms must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning and are not attributable to another substance or medical condition. 

*DSM-5.*
Major Depressive Disorder

Remission: symptom free
Recovery: > 4 months post remission
Severity

- Antidepressants may not be as effective, nor appropriate for individuals with mild depression. However, this is a general rule, and each situation should be reviewed individually.

- For moderate to severe cases of depression, they seem to be more effective.
Antidepressants and Youth

Current data:

• Review of studies in children and adolescents showed an increased risk of suicidality (thinking/behaving) in this population being treated with antidepressants. 4% vs. 2% placebo.

• Only a couple of antidepressants are FDA approved for adolescents (fluoxetine, escitalopram, the former also for children)

• FDA Black box warning to age 25.
Types of Antidepressants

- **Tricyclics**—older. Now much more commonly used for chronic pain, insomnia rather than depression. Typically more side effects and risk at higher doses.

- **Selective Serotonin Reuptake Inhibitors (SSRIs)**—most commonly prescribed group. Gastrointestinal, sexual side effects common.

- **Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs)** and other “hybrids.” May be more likely to cause “discontinuation syndrome.”

- **Monoamine Oxidase Inhibitors**—older, rarely used. Require special diet/restrictions.

- **Newest:**—Esketamine. NMDA receptor antagonist.

- Individuals with bipolar affective disorder may be at higher risk for “mood cycling” when using antidepressants.

- Many antidepressants have FDA labeling for anxiety and other disorders.
ANTI-DEPRESSANTS

• Choosing a Therapy

“The effectiveness of antidepressant medications is generally comparable between classes and within classes of medications. Therefore, the initial selection of an antidepressant medication will largely be based on the anticipated side effects, the safety or tolerability of these side effects for individual patients, patient preference, quantity and quality of clinical trial data regarding the medication, and its cost.”

Tricyclics

• Effective and time-tested medications
  (used for many other purposes including bed-wetting, pain, sleep)

Down side:

  – Weight gain
  – Sedation
  – Low blood pressure
  – “Drying up” side effects
  – Heart problems
  – High lethality in overdose

• Common:
  • Amitriptyline (Elavil)
  • Imipramine (Tofranil)
  • Desipramine (Norpramin)
  • Nortriptyline (Pamelor/Aventyl)
  • Doxepine (Sinequan)
  • Clomipramine (Anafranil)
SSRIs (Serotonin-Specific Reuptake Inhibitors)

- Easier to prescribe than most other antidepressants
- Less severe side effects (in general)
- Effective for many anxiety disorders
- Common side effects - stomach upset, headache, sweating, overstimulation, sexual dysfunction.
- Less common side effects: bleeding problems, low sodium, slow heart beat, and others previously mentioned.

Fluoxetine (Prozac)
Paroxetine (Paxil/Pexeva)
Sertraline (Zoloft)
Citalopram (Celexa)
Escitalopram (Lexapro)
Fluvoxamine (Luvox)
Non-SSRIs/Hybrids

- Vilazodone (Viibryd)
- Bupropion (Wellbutrin/Zyban)
- Venlafaxine (Effexor)
- Desvenlafaxine (Pristiq)
- Duloxetine (Cymbalta)
- Mirtazapine (Remeron)
- Trazodone (Desyrel)
- Levomilnacipram (Fetzima)
- Vortioxetine (Trintellix)
Questions about Antidepressants

Tricyclics: Does the dose require lab work or heart checks (EKG)?
Older people may have more confusion/memory problems with these meds
“Discontinuation Syndrome”

- Often, when people have been on antidepressants for a while, abruptly stopping them might cause “discontinuation syndrome.”

- People might have flu-like symptoms, feel “spacey,” odd sensations, changes in mood, behavior…

- *Typically,* restarting and tapering more slowly takes care of
Monoamine Oxidase Inhibitors

- Phenelzine, Tranylcypromine, Isocarboxazid, Selegeline
- Require special diet-low tyramine
- If not followed, may result in a hypertensive crisis
- Caution regarding drug-drug interactions
- Easy to remember rule: don’t use with anything else!
esketamine

- FDA approved for treatment resistant depression in adults, in conjunction with an oral antidepressant.
- Requires certified healthcare center and pharmacy registered in a monitoring system (REMS).
- Direct observation by a healthcare provider for at least 2 hours after administration.
- Main side effects: increased blood pressure, cognitive impairment (it is in the “dissociative anesthetic” family).
esketamine nasal spray

**SPRAVATO™ (esketamine) nasal spray, CIII**

**Table 1: Recommended Dosage for SPRAVATO**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Duration</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Induction Phase</strong></td>
<td>Weeks 1 to 4:</td>
<td>Day 1 starting dose: 56 mg Subsequent doses: 56 mg or 84 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administer twice per week</td>
</tr>
<tr>
<td><strong>Maintenance Phase</strong></td>
<td>Weeks 5 to 8:</td>
<td>56 mg or 84 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administer once weekly</td>
</tr>
<tr>
<td></td>
<td><strong>Week 9 and after:</strong></td>
<td>56 mg or 84 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administer every 2 weeks or once weekly*</td>
</tr>
</tbody>
</table>

* Dosing frequency should be individualized to the least frequent dosing to maintain remission/response.
Types of Psychotropic Medications

- Antidepressants
- **Mood Stabilizers**
- Antipsychotic meds (neuroleptics)
- Anxiolytics/Hypnotics
- ADHD meds
- Meds used in the treatment of Substance Use Disorders
- Meds used in the treatment of Alzheimer’s disease
- Miscellaneous
Mood Stabilizers*

- **Lithium Carbonate**
- **Anticonvulsants**
  - Valproic Acid/Divalproex Na+ (Depakote)
  - Carbamazepine (Tegretol)
  - Lamotrigine (Lamictal)
  - Oxcarbazepine (Trileptal)?
  - Gabapentin (Neurontin)?
  - Topiramate (Topamax)?
- **Antipsychotics**
Lithium Carbonate

Most studied (1950s)
Acute and prophylactic treatment
More helpful for mania than depression
May be most helpful for bipolar pattern of: mania then depression

Long term use associated with anti-suicidal effect
Lithium Side Effects

- Narrow Therapeutic Window
- Labs required (0.6-1.2 mEq/L)*
- Lithium Carbonate, Lithium Citrate
- Generic, Lithobid, Eskalith, Lithonate, Lithotabs

Drug interactions (NSAIDS, ACE inhibitors, etc…)

- Therapeutic dose side effects: tremor, weight gain, excess thirst and urination
- Hypothyroidism
- Long term use: kidney problems
- Teratogenic
Valproic Acid/Divalproex Na+

- **Depakene, Depakote**
- **Useful in acute mania, mixed/rapid cycling**
- **Also approved for migraine headaches**
- **Labs---**
Valproic Acid

- **Problems:**
  - Weight gain, tremor, G.I. side effects
  - Edema, sedation, ataxia
  - Hepatic
  - Hematologic (esp. platelets)
  - Pancreatitis
  - P.C.O. (watch oligomenorrhea, acne, hirsutism)
  - Alopecia- selenium may help
  - Teratogenicity
  - Elevations in ammonia levels
  - Interactions
Carbamazepine

- **Tegretol/Carbatrol/Equetro**
- **Useful in mania, mixed states**
- **Chronic pain treatment**
Lamotrigine
So,

- With lithium, valproic acid and carbamazepine there are:
  - Birth Defects Risk
  - Periodic Lab work necessary
  - With lamotrigine, the greatest risk is serious rash and immune system problem.
Medications in Bipolar Affective Disorder Phases

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Trade Name</th>
<th>Mania</th>
<th>Mixed</th>
<th>Maintenance</th>
<th>Depression</th>
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</thead>
<tbody>
<tr>
<td>Valproate</td>
<td>Depakote</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>Equetro</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ext. release</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamotrigine</td>
<td>Lamictal</td>
<td>X</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Lithium</td>
<td></td>
<td>X</td>
<td>X</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Aripiprazole</td>
<td>Abilify</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X (TRD)</td>
</tr>
<tr>
<td>Ziprasidone</td>
<td>Geodon</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risperidone</td>
<td>Risperdal</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quetiapine</td>
<td>Seroquel</td>
<td>X</td>
<td></td>
<td>X, plus TRD</td>
<td></td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Thorazine</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olanzapine</td>
<td>Zyprexa</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Olanzapine/Fluoxetine comb.</td>
<td>Symbyax</td>
<td></td>
<td></td>
<td></td>
<td>X, plus TRD</td>
</tr>
<tr>
<td>Lurasidone</td>
<td>Latuda</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Cariprazine</td>
<td>Vraylar</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Types of Psychotropic Medications

- Antidepressants
- Mood Stabilizers
- **Antipsychotic meds** (neuroleptics)
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- Meds used in the treatment of Substance Use Disorders
- Meds used in the treatment of Alzheimer’s disease
- Miscellaneous
Why are antipsychotic medications prescribed?

- For treatment of psychosis
- For treatment of severe agitation
- For mood stabilization, including both bipolar affective disorder and treatment resistant depression.
The History of Antipsychotics

Typical antipsychotics

1950s: chlorpromazine
1960s: haloperidol, trifluoperazine
1970s: molindone, thioridazine, prochlorperazine
1980s: clozapine, fluphenazine, perphenazine, thiothixene

Atypical antipsychotics

1990s: ziprasidone, risperidone, olanzapine, quetiapine
2000s: aripiprazole, paliperidone, asenapine, iloperidone, lurasidone, cariprazine

2006+: paliperidone long-acting IM, olanzapine long-acting IM, aripiprazole long-acting IM

Fluphenazine and haloperidol decanoates
Antipsychotic medications

- **Conventionals**
- **Atypicals**
Side Effects--Very Serious

- Neuroleptic Malignant Syndrome
- Seizures
- Heart Problems
- Eye Problems
- Increased risk of death in elderly with dementia
- Jaundice
- Tardive Dyskinesia
- Temperature Dysregulation
- Teratogenicity (birth defects)
- Swallowing problems
Briefly, Conventionals (older)

- Haloperidol, fluphenazine, chlorpromazine, thiothixene, perphenazine, loxapine, thioridazine*, trifluoperazine, etc…

- Extrapyramidal side effects (parkinsonian), sedation, pulse and blood pressure changes, galactorrhea (milk production), etc…

- Often require side-effect medication to treat shakiness, etc…
Atypicals

- Clozapine
- Risperidone
- Paliperidone
- Olanzapine
- Quetiapine
- Ziprasidone
- Aripiprazole
- Asenapine
- Iloperidone
- Lurasidone
- Cariprazine

- All atypicals have a warning re: hyperglycemia risk.
- Metabolic syndrome might be a concern with all.
- Some have cardiac side-effects
- Hypertriglyceridemia might be more of a concern with the dibenzothiazepines
- Most atypicals useful in mania, often used for augmentation with treatment resistant depression.
Metabolic Syndrome

- 3 of the following:
  - Abdominal obesity
  - Elevated triglycerides
  - Low HDL
  - Hypertension
  - Elevated Fasting Glucose
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Antianxiety Medications

• Benzodiazepine (potentially habit forming)

• Non-Benzodiazepine (less likely to be habit-forming)
DSM 5 Anxiety Disorders

Specific Phobia
Social Anxiety Disorder (Social Phobia)
Panic Disorder
Generalized Anxiety Disorder
Substance/Medication-Induced Anxiety Disorder
Agoraphobia | Separation Anxiety Disorder | Selective Mutism |
Anxiety Disorder Due to Another Medical Condition |
Other Specified Anxiety Disorder | Unspecified Anxiety Disorder

PTSD is now under Trauma-and Stressor-Related Disorders
OCD  is now under Obsessive-Compulsive and Related Disorders
Types of anxiety problems
## Common Benzodiazepines

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
<th>$t_{1/2}$</th>
<th>onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorazepam</td>
<td>Ativan</td>
<td>S</td>
<td>fast</td>
</tr>
<tr>
<td>Oxazepam</td>
<td>Serax</td>
<td>S</td>
<td>slow</td>
</tr>
<tr>
<td>Alprazolam</td>
<td>Xanax*</td>
<td>I/S</td>
<td>fast</td>
</tr>
<tr>
<td>Diazepam</td>
<td>Valium*</td>
<td>L</td>
<td>very fast</td>
</tr>
<tr>
<td>Clorazepate</td>
<td>Tranxene*</td>
<td>L</td>
<td>very fast</td>
</tr>
<tr>
<td>Clonazepam</td>
<td>Klonopin</td>
<td>L</td>
<td>moderate</td>
</tr>
<tr>
<td>Chlordiazepoxide</td>
<td>Librium*</td>
<td>L</td>
<td>fast</td>
</tr>
</tbody>
</table>

- $t_{1/2} =$ half-life
- *metabolites
  - L=long
  - I=intermediate
  - S=short
Dose equivalents of common benzodiazepines

- Chlordiazepoxide 12.5/25mg?
- Diazepam 5mg
- Lorazepam 1mg
- Alprazolam 0.5mg
- Clonazepam 0.25mg

These medications come in different forms (pill, injection, etc...) and some have different indications (anxiety, epilepsy, alcohol withdrawal, etc...)
Non-benzodiazepines

• Anxiolytics
  – Antidepressants
  – Buspirone
  – Antihistamines
  – Blood pressure medications
    (B-blockers, α2 – receptor meds)
  – Antipsychotics
  – Anticonvulsants
  – Barbiturates

• Some of these medications have FDA approved indications for treating anxiety. Some do not.
Hypnotics:

- Zolpidem (Ambien) and other names...
- Zaleplon (Sonata)
- Eszopiclone (Lunesta) lower starting doses recommended
  - The above 3 have a “black box warning” regarding “complex sleep behavior”
- Ramelteon (Rozerem) Less habit forming-more melatonin-like
- Melatonin
- Suvorexant (Belsomra) orexin receptor antagonist...
- Benzodiazepines
- Other- Antihistamines
- Antidepressants-most are not FDA approved for sleep- commonly used are trazodone, mirtazapine and low dose doxepin-(Silenor)
- Chloral hydrate
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ADHD medications

- **Stimulant**

- **Non-Stimulant**

- All FDA approved medications for ADHD carry warning guides re: cardiac and mental problems.

- Vitals (need to track blood pressure, pulse, height, weight….)
Stimulant medication

- Methylphenidate (there are 10 brand names with various formulations)

- Dexmethylphenidate (Focalin)

- Amphetamine compounds (Adderall)
- Dextroamphetamine (Dexedrine/Dextrostat)
- Lisdexamfetamine (Vyvanse)
- Methamphetamine (Desoxyn)

- Magnesium Pemoline (Cylert)-essentially compassionate use only, due to liver concerns
Stimulant Medications

- The various formulations include short-acting, long-acting, patch, liquid, dissolvable, etc...

- Common side effects and concerns include insomnia, anxiety, decreased appetite, habituation

- Less common side effects: psychosis, cardiovascular, other...
Non-stimulants

- Atomoxetine (Strattera) SNRI
- Antidepressants, including bupropion, venlafaxine, TCAs (IMI, DMI)
- α2A agonists: caution re: abrupt d/c.
- Clonidine (both pill and patch)-watch dosing!
- Guanfacine--short acting-Tenex
  --long acting-Intuniv

- Not all are FDA approved for the indication of treating ADHD
Types of Psychotropic Medications

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- Meds used in the treatment of substance use disorders
- Meds used in the treatment of Alzheimer’s disease
- Miscellaneous
• Treatment of Substance Use Disorders with medication is referred to as “Medication Assisted Treatment.”

• “Assisted” is used, as it is implied that other therapies are also utilized.

• We have MAT for the following disorders: Alcohol Use, Opioid Use, Tobacco Use. We don’t have FDA approved MAT for disorders such as Cocaine Use, Stimulant Use, Cannabis Use or others.

• We are referring here to treating the disorders themselves,
MAT and alcohol use disorder

- **Disulfiram** *(Antabuse)* Aversive therapy. Usually “monitored.” Can become quite ill if using alcohol in any form.

- **Naltrexone** *(Revia)*-daily pill. *(Vivitrol)*- monthly injection 380mg. Also used in opioid use disorders. Watch liver function. Also, a concern if someone does need opioid for pain during the course of treatment.

- **Acamprosate** *(Campral)*. 3 times a day oral medication.
  - Liver function problems: not a concern with use
  - Kidney function problems: potential concern with use

Naltrexone and acamprosate reduce cravings.
Opioids use disorders (heroin, prescription drugs, etc…)

- **Replacement Therapies:**

- **Methadone:** Special outpatient treatment center

- **Buprenorphine:** (partial agonist)/naloxone (antagonist) =
  - indicated for maintenance treatment in opioid dependence. Office-based
  - 1) Induction 2) Stabilization 3) Maintenance
  - Many forms, brands. (daily pill, film, monthly injection, 6-month implant, etc…)

- **Opiate blockade:**

- **Naltrexone (Revia/Depade) and monthly injection Vivitrol**
Most successful with a smoking cessation program.

- Nicotine replacement
- Gum, nasal spray, patch, lozenge, etc...
- What of e-cigarettes?

- **Bupropion** (Zyban/Wellbutrin)

- **Varenicline** (Chantix)

- Many other non-pharmacologic treatments
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## Treatments-at-a-glance

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
<th>Approved For</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donepezil</td>
<td>Aricept</td>
<td>All stages</td>
<td>Nausea, vomiting, loss of appetite and increased frequency of bowel movements.</td>
</tr>
<tr>
<td>Galantamine</td>
<td>Razadyne</td>
<td>Mild to moderate</td>
<td>Nausea, vomiting, loss of appetite and increased frequency of bowel movements.</td>
</tr>
<tr>
<td>Memantine</td>
<td>Namenda</td>
<td>Moderate to severe</td>
<td>Headache, constipation, confusion and dizziness.</td>
</tr>
<tr>
<td>Rivastigmine</td>
<td>Exelon</td>
<td>Mild to moderate</td>
<td>Nausea, vomiting, loss of appetite and increased frequency of bowel movements.</td>
</tr>
<tr>
<td>Memantine + Donepezil</td>
<td>Namzaric</td>
<td>Moderate to severe</td>
<td>Nausea, vomiting, loss of appetite, increased frequency of bowel movements, headache, constipation, confusion and dizziness.</td>
</tr>
</tbody>
</table>
So,

- We reviewed classes of medications used to treat mental illnesses. Some of these medications are used “off-label.”

- Medications alone rarely are sufficient.

- It is important for patients/advocates to be aware of risks, benefits and alternatives to medication treatment.