Medication Side Effects:

Staying Healthy While on Psychotropic Medications

Megan Maroney PharmD, BCPP
Clinical Assistant Professor
Ernest Mario School of Pharmacy
Rutgers the State University of New Jersey

Clinical Psychiatric Pharmacist
Monmouth Medical Center
Long Branch, New Jersey
Objectives

• List common and rare side effects of commonly used mental health medications
• Recognize warning signs of potentially serious adverse effects of psychotropic medications
• Review ways to prevent and manage potentially dangerous medication side effects
What is a Side Effect?

• Side effect = adverse effect

side ef·fect

noun: side effect; plural noun: side effects

1. a secondary, typically undesirable effect of a drug or medical treatment.
Psychotropic Medication Classes

- Antipsychotics
- Mood Stabilizers
- Antidepressants
ANTIPSYCHOTICS
# 1\textsuperscript{st} Generation (Typical) Antipsychotics

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloperidol</td>
<td>Haldol</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Thorazine</td>
</tr>
<tr>
<td>Fluphenazine</td>
<td>Prolinxin</td>
</tr>
<tr>
<td>Thiothixene</td>
<td>Navane</td>
</tr>
<tr>
<td>Trifluoperazine</td>
<td>Stelazine</td>
</tr>
<tr>
<td>Thioridazine</td>
<td>Mellaril</td>
</tr>
<tr>
<td>Perphenazine</td>
<td>Trilafon</td>
</tr>
<tr>
<td>Loxapine</td>
<td>Loxitane</td>
</tr>
</tbody>
</table>
1st Generation Antipsychotics

• Advantages
  – Effective for symptoms of psychosis
  – Inexpensive

• Disadvantages
  – Could worsen memory and concentration
  – Minimally effective for mood symptoms
  – Higher incidence of certain side effects (EPS, NMS, etc)

EPS: extrapyramidal symptoms
NMS: neuroleptic malignant syndrome
# 2nd Generation (Atypical) Antipsychotics

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clozapine</td>
<td>Clozaril, FazaClo</td>
</tr>
<tr>
<td>Olanzapine</td>
<td>Zyprexa (Zydis, Relvprevv)</td>
</tr>
<tr>
<td>Risperidone</td>
<td>Risperdal (Consta, M-tab)</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>Seroquel, Seroquel XR</td>
</tr>
<tr>
<td>Ziprasidone</td>
<td>Geodon</td>
</tr>
<tr>
<td>Aripiprazole</td>
<td>Abilify, Abilify Maintena</td>
</tr>
<tr>
<td>Paliperidone</td>
<td>Invega, Invega Sustenna</td>
</tr>
<tr>
<td>Generic</td>
<td>Brand</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>Asenapine</td>
<td>Saphris</td>
</tr>
<tr>
<td>Iloperidone</td>
<td>Fanapt</td>
</tr>
<tr>
<td>Lurasidone</td>
<td>Latuda</td>
</tr>
</tbody>
</table>
**2nd Generation Antipsychotics**

- **Advantage**
  - Effective for symptoms of psychosis
  - Helpful for mood disorders
  - Lower rate of side effects compared to conventional (1st generation) antipsychotics

- **Disadvantage**
  - Higher risk of weight gain
  - Higher risk of diabetes
  - Expensive
Metabolic Syndrome

• All atypical antipsychotics have been shown to cause metabolic adverse effects to some degree including
  – Weight gain
  – Metabolic syndrome
  – Cardiovascular disease
  – Type 2 diabetes

• Each drug has a different degree of risk of causing these effects
### Risk of Weight Gain with Second Generation Antipsychotics

<table>
<thead>
<tr>
<th>Medication</th>
<th>Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clozapine (Clozaril)</td>
<td>High</td>
</tr>
<tr>
<td>Olanzapine (Zyprexa)</td>
<td></td>
</tr>
<tr>
<td>Iloperidone (Fanapt)</td>
<td>Medium</td>
</tr>
<tr>
<td>Paliperidone (Invega)</td>
<td></td>
</tr>
<tr>
<td>Quetiapine (Seroquel)</td>
<td></td>
</tr>
<tr>
<td>Risperidone (Risperdal)</td>
<td></td>
</tr>
<tr>
<td>Aripiprazole (Abilify)</td>
<td>Low</td>
</tr>
<tr>
<td>Asenapine (Saphris)</td>
<td></td>
</tr>
<tr>
<td>Lurasidone (Latuda)</td>
<td></td>
</tr>
<tr>
<td>Ziprasidone (Geodon)</td>
<td></td>
</tr>
</tbody>
</table>
# Metabolic Monitoring with Second Generation Antipsychotics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Baseline</th>
<th>1 month</th>
<th>2 months</th>
<th>3 months</th>
<th>Quarterly</th>
<th>Annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight / BMI</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Waist Measurement</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Blood Sugar</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Cholesterol/ lipids</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

BMI = Body Mass Index

Risk Factors for Metabolic Syndrome

• Children and adolescents
• People new to taking antipsychotic medications
• Does not seem to depend on the dose of medication – although for some, lowering the dose may be helpful
• Polypharmacy – use of more than one antipsychotic at a time
Managing Metabolic Side Effects

- Nutrition counseling
  - Healthy blood sugar: low carbohydrate, high protein, high in vegetables
  - Healthy cholesterol: low saturated fat
- Increasing physical activity
  - 30 minutes per day
  - At least 5 days per week
- Switching to a medication with less metabolic risk
- Occasionally adding a medication such as metformin may be helpful
Weight Loss IS Possible!

• Recent study published in New England Journal of Medicine
  – Weight loss program vs. nutrition and exercise information
    - Program - 37.8% lost ≥ 5% of their body weight
      • Average weight loss was 7 pounds
    - Information - 22.7% lost significant weight
  
• 83% of study participants were on an atypical antipsychotic
  – Over 22% were on either clozapine or olanzapine

Symptoms of Diabetes and Diabetic Keto-acidosis (DKA)

• Rapid onset of
  – Excessive thirst
  – Excessive urination
  – Weight loss
  – Nausea and vomiting
  – Dry or flushed skin
  – Fruity odor on breath

• Can lead to
  – Dehydration
  – Rapid breathing
  – Confusion
  – Coma
Extrapyramidal Symptoms (EPS)

• Acute dystonia
  – Severe muscle spasm

• Akathisia
  – Inner restlessness
  – “Ants in the pants”

• Pseudoparkinsonism
  – Tremor, slowness, mask face, gait instability, cogwheel rigidity

• Tardive dyskinesia
  – Uncontrollable muscle movements
  – Mostly affecting oral-facial muscles
High Prolactin Levels

• All antipsychotics carry a risk of increasing a hormone called prolactin
  – Especially “typical” antipsychotics, risperidone (Risperdal) and paliperidone (Invega)

• Symptoms
  – Breast swelling and tenderness, lactation
  – Menstrual irregularities
  – Sexual dysfunction

• Potential complications
  – Infertility
  – Increased risk of osteoporosis?
Neuroleptic Malignant Syndrome (NMS)

• Occurs in < 1% of people taking antipsychotic medication

• Symptoms include:
  – Confusion
  – Fever and sweating
  – Extreme muscle stiffness

• Contact your healthcare provider immediately if you develop any of these symptoms
MOOD STABILIZERS
## Mood Stabilizers

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium</td>
<td>Eskalith, Lithobid</td>
</tr>
<tr>
<td>Valproic acid</td>
<td>Depakote, Depakene</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>Tegretol, Equetro</td>
</tr>
<tr>
<td>Oxcarbazepine</td>
<td>Trileptal</td>
</tr>
<tr>
<td>Lamotrigine</td>
<td>Lamictal</td>
</tr>
<tr>
<td>Topiramate</td>
<td>Topamax</td>
</tr>
</tbody>
</table>
Lithium

• Common side effects
  – Tiredness, increased thirst and urination, stomach upset, dizziness, fine hand tremors

• Rare side effects
  – Diabetes insipidus – extreme increase in thirst and urination
  – Hypothyroidism (underactive thyroid) – fatigue, weight gain, dry skin, sensitivity to cold, thinning hair, memory problems, depression
  – Kidney problems
Valproic Acid (Depakote, Depakene)

• Common side effects
  – Nausea, diarrhea, weight gain, drowsiness, dizziness

• Rare side effects
  – Hair loss
  – Liver problems
  – Low platelets – increased risk of bruising and bleeding
  – Pancreatitis – severe stomach pain, nausea, vomiting, loss of appetite
  – Increased ammonia levels – confusion, difficulty thinking
Liver Toxicity

• Risk with valproic acid (Depakote) is highest in the first 6 months of taking the drug
• Liver enzymes should be checked periodically along with drug levels
• Symptoms of liver toxicity include
  – Yellowing of eyes and skin
  – Muscle weakness, feeling tired and uneasy
  – Stomach pain, vomiting, appetite loss
Carbamazepine (Tegretol)

- **Common side effects**
  - Upset stomach, dry mouth, constipation, dizziness, drowsiness, mild rash

- **Rare side effects**
  - Decreased sodium levels – nausea, drowsiness, confusion
  - Stevens-Johnson Syndrome
  - Lower blood cell counts – fever, sore throat, infections, easy bruising
Stevens-Johnson Syndrome

- Severe, potentially deadly rash
- Can occur rarely with carbamazepine, oxcarbazepine, lamotrigine and other drugs
  - Carbamazepine - Asian/South Asian persons at higher risk
- Typically presents within first few months of starting medication
- Often begins with flu-like symptoms
- Painful red, purplish rash that spreads quickly
ANTIDEPRESSANTS
## Antidepressants – Selective Serotonin Reuptake Inhibitors (SSRIs)

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
</tr>
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<tbody>
<tr>
<td>Fluoxetine</td>
<td>Prozac</td>
</tr>
<tr>
<td>Paroxetine</td>
<td>Paxil</td>
</tr>
<tr>
<td>Sertraline</td>
<td>Zoloft</td>
</tr>
<tr>
<td>Citalopram</td>
<td>Celexa</td>
</tr>
<tr>
<td>Escitalopram</td>
<td>Lexapro</td>
</tr>
<tr>
<td>Fluvoxamine</td>
<td>Luvox</td>
</tr>
</tbody>
</table>
SSRIs

• Common side effects
  – Headache, nausea, diarrhea, increased sweating, dry mouth, restlessness, drowsiness, insomnia
  – Sexual dysfunction

• Rare side effects
  – Serotonin syndrome — fever, sweating, muscle tics, shivering, diarrhea, confusion
  – Increased bleeding risk
  – Low sodium levels — headache, weakness, difficulty concentrating, memory problems
  – Teeth grinding
  – Abnormal heart rhythm — palpitations, dizziness, shortness of breath, fainting
Medication Information

NAMI.org ➔ Treatment ➔ Medications
Other Resources

• Mayo Clinic – mayoclinic.com
• FDA - http://www.fda.gov/Drugs/ResourcesForYou/Consumers/default.htm