Metabolic Monitoring, Schizophrenia Spectrum Illnesses, & Second Generation Antipsychotics

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Montefiore Medical Center
Northwell Health
New York State Office of Mental Health
Netsmart Technologies
Objectives

• To understand the relationship between
  • Serious Mental Illness (SMI)
  • antipsychotic medication
  • metabolic & cardiovascular risk factors

• To understand the importance of
  • screening for modifiable risk factors for those on antipsychotics

• To understand the guidelines for
  • metabolic monitoring among the SMI populations taking second generation antipsychotics (SGAs)
You Can Save Lives!

• People with Schizophrenia die **decades** earlier due to preventable medical illness

• Signs of medical illness are often present early, but medical care is tragically often suboptimal

• We can stop this premature death by
  • Prevention efforts
  • Monitoring for metabolic problems
  • Successful referral for treatment if metabolic problems are detected
People with SMI Die Decades Earlier

• People with serious mental illness have mortality rates 2 or 3 times as high as the general population
• This translates to 13-30 years shorter life expectancy
• 60% of this excess mortality is due to physical illness
One Of Multiple Studies Showing That Schizophrenia Is A Deadly Disease

- Olfson and colleagues studied 1,138,853 individuals with schizophrenia in the Medicaid program. **Those with schizophrenia were more than 3.5 times as likely to die** in the follow-up period compared with adults in the general population. **On average, the years of potential life lost for each deceased individual were 28.5 years.**

Premature Mortality Among Adults With Schizophrenia in the United States JAMA Psychiatry. 2015;72(12):1172-1181.
These Deaths are Preventable

• The increased morbidity and mortality is largely seen due to higher prevalence of modifiable risk factors
• Of the physical health problems, specifically metabolic and cardiovascular co-morbidity are increasingly important
• Of the SMI population, people taking antipsychotic medication often have multiple related cardiovascular and metabolic risk factors
Metabolic and Cardiovascular Risk Factors

• Hypertension
• Diabetes
• Pre-diabetes
• Obesity
• Waist circumference
• Cholesterol
• Triglycerides
What is the prevalence of obesity, pre-diabetes, and type 2 diabetes in the populations in which the SGAs are used?

- The prevalence of diabetes and obesity among individuals with schizophrenia and affective disorders is thought to be ~1.5-2 x higher than on the general population.
Signs of medical illness are often present early, but medical care is usually suboptimal.
Even Though First Episode Patients Are Young and Have Had Limited Antipsychotic Treatment, Medical Co-Morbidities Are Common

N=394
Mean age =23 years
Mean lifetime days of antipsychotic treatment = 47 days
Note How Common Abnormalities Are and How Infrequent Is Treatment

Figure 2. Prevalence of Smoking, Lipid Abnormalities, Hypertension, Diabetes, and Metabolic Syndrome and Respective Medication Treatment for the Conditions

N=394
Mean age = 23 years
Mean lifetime days of antipsychotic treatment = 47 days
Those with Psychiatric Diagnoses Receive Inferior Quality of Care

REVIEW ARTICLE

Quality of medical care for people with and without comorbid mental illness and substance misuse: systematic review of comparative studies
Alex J. Mitchell, Darren Malone, Caroline Carney Doebbeling
The British Journal of Psychiatry May 2009, 194 (6) 491-499; DOI: 10.1192/bjp.bp.107.045732

• In a comparative review, more than 70% of studies found that patients with psychiatric diagnoses receive inferior quality of care in at least one medical area (Mitchell et al. 2009)
Most antipsychotic agents are closely linked with adverse effects on weight, lipids, and glucose metabolism, and cardiovascular disease.
If Metabolic Abnormalities Are So Prevalent, What Should We Do?

• For people without metabolic abnormalities, we want to prevent metabolic abnormalities from occurring
  • Factor metabolic side effect profiles into your decision process about what antipsychotic to prescribe
  • Consider metabolic side effect profiles into your decision process about adding other medications such as mood stabilizers
  • Healthy lifestyle and nutritional education should be provided to all patients
If Metabolic Abnormalities Are So Prevalent, What Should We Do?

We have to follow monitoring guidelines for doing tests, and we have to make sure that our patients get the tests.
Monitoring Catches Modifiable Risk Factors: Inpatient Screening

• Routine testing of 733 newly admitted inpatients with schizophrenia found:
  • 6% with diabetes
  • 17% with hypertension
  • 24% with obesity
  • 27% with hypertryglyceridemia
  • 66% with high cholesterol (Bernardo et al. 2009)

• Modifiable risk factors are also commonly found in outpatients with schizophrenia
Metabolic Monitoring should occur more frequently for those on SGAs...but often it occurs less frequently

- People with SMI on antipsychotics represent a vulnerable group for whom more frequent metabolic monitoring is indicated

- The signs present early

- Early intervention is possible and appropriate

- Despite this, access to and quality of health care is problematic for individuals with SMI
Guideline concordant monitoring of metabolic risk in people treated with antipsychotic medication: systematic review and meta-analysis of screening practices

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Background. Despite increased cardiometabolic risk in individuals with mental illness taking antipsychotic medication, metabolic screening practices are often incomplete or inconsistent.
Many Prescribed SGAs Aren’t Screened for Preventable Cardiovascular Risk Factors

- 39 studies involving 218,940 patients
- in the UK, Canada, Spain, the USA and Australia
- examined screening practices on routine clinical care
- all subgroups (not only psychotics spectrum).

Monitoring Grades
- <50% inadequate
- >= 50% suboptimal
- >=70% adequate
- >=80% good
- >=90% optimal
Many Prescribed SGAs aren’t Screened for Preventable Cardiovascular Risk Factors

<table>
<thead>
<tr>
<th>Metabolic Monitoring Parameter</th>
<th>Rate of Testing</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>47.9%</td>
<td>Inadequate</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>69.8%</td>
<td>Suboptimal</td>
</tr>
<tr>
<td>Glucose</td>
<td>44.3%</td>
<td>Inadequate</td>
</tr>
<tr>
<td>Lipid</td>
<td>22.2%</td>
<td>Inadequate</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>41.5%</td>
<td>Inadequate</td>
</tr>
<tr>
<td>Triglyceride</td>
<td>59.9%</td>
<td>Suboptimal</td>
</tr>
<tr>
<td>HbA1c</td>
<td>16.0%</td>
<td>Inadequate</td>
</tr>
</tbody>
</table>
Many Prescribed SGAs Aren’t Screened for Preventable Cardiovascular Risk Factors

23.76% = The percentage of patients in NY State with diagnoses of Schizophrenia or Bipolar Disorder prescribed antipsychotics...

...but without Hemoglobin A\textsubscript{1c} or LDL-C measured in previous 12 months

29.83% = The percentage of patients in NY State with diagnoses of both Schizophrenia and diabetes...

...without Hemoglobin A\textsubscript{1c} measured in previous 12 months
SGAs Contribute to RISK FACTORS, BUT... ...More Metabolic monitoring is needed... ...not less SGA Use
The Long-Term Effects of Antipsychotic Medication on Clinical Course in Schizophrenia

Donald C., Goff, M.D., Peter Falkai, M.D., Ph.D., W. Wolfgang Fleischhacker, M.D., Ragy R. Girgis, M.D., Rene M. Kahn, M.D., Ph.D., Hiroyuki Uchida, M.D., Ph.D., Jingping Zhao, M.D., Ph.D., Jeffrey A. Lieberman, M.D.

https://doi.org/10.1176/appi.ajp.2017.16091016
Guidelines & Recommendations
Consensus Development Conference on Antipsychotic Drugs and Obesity and Diabetes

American Diabetes Association
American Psychiatric Association
American Association of Clinical Endocrinologists
North American Association for the Study of Obesity

Antipsychotic medications are an important component in the medical management of many psychotic conditions. With the introduction of the second-generation antipsychotics (SGAs) over the last decade, the use of these medications for psychotic illnesses and are also widely used in many other psychiatric conditions. Introduced ~50 years ago, these medications have helped millions of people manage their symptoms. For people who respond well, antipsychotics can mean the difference between leading an engaged, fulfilling community life and being severely disabled.

The first-generation antipsychotics (FGAs) are still widely available and are effective at treating positive symptoms of psychosis, such as hallucinations and delusions.

- How should patients be monitored for the development of significant weight gain, dyslipidemia, and diabetes, and how should they be treated if diabetes develops?
Consensus Conference 2004
Monitoring Recommendations

Table 3—Monitoring protocol for patients on SGAs*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>4 weeks</th>
<th>8 weeks</th>
<th>12 weeks</th>
<th>Quarterly</th>
<th>Annually</th>
<th>Every 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal/family history</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Weight (BMI)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Waist circumference</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>X</td>
<td></td>
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<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Fasting plasma glucose</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
<td>X</td>
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<tr>
<td>Fasting lipid profile</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*More frequent assessments may be warranted based on clinical status
If patients have abnormalities on testing, the frequency of testing is modified and individualized:

• To the abnormality in questions
• Based on the severity of the abnormality
• Customization is determined by coordination with patient’s primary medical doctor, patient, and psychiatrist
• Customization can include healthy lifestyle strategies, medication strategies or a combination of these
When To Do an Intervention

- There are varied professional guidelines and they sometimes differ on particular recommendations
- The important point is to choose a guideline and IMPLEMENT the recommendations
- As an example, we will present in the following slides some of the recommendations from the Mount Sinai Conference on Physical Health Monitoring of Patients With Schizophrenia (Am J Psychiatry 2004; 161:1334–1349)
Physical Health Monitoring of Patients With Schizophrenia

Objective: Schizophrenia is associated with several chronic physical illnesses and a shorter life expectancy, compared with life expectancy in the general population. One approach to improving the health of patients with schizophrenia is to improve the monitoring of physical health that occurs in psychiatric settings. The authors discuss a consensus panel’s recommendations for improving the physical health monitoring of patients with schizophrenia who are treated in outpatient settings.

Method: A consensus meeting including psychiatric and other medical experts assembled on October 17–18, 2002, to evaluate the existing literature and to develop recommendations for physical health monitoring of patients with schizophrenia.

- mass index, plasma glucose level, lipid profiles, and signs of prolactin elevation or sexual dysfunction. Information from monitoring should guide the selection of antipsychotic agents. Specific recommendations were made for cardiac monitoring of patients who receive medications associated with QT interval prolongation, including thioridazine, mesoridazine, and ziprasidone, and for monitoring for signs of myocarditis in patients treated with clozapine. Patients who receive both first- and second-generation antipsychotic medications should be examined for extrapyramidal symptoms and tardive dyskinesia. Patients with schizophrenia should receive regular visual examinations.
Obesity

1. Monitor and document the BMI of every patient with schizophrenia, regardless of the antipsychotic medication prescribed
   a. Weigh patients at every visit and track those weights
   b. Encourage patients to monitor and chart their own weight
   c. Measure and document waist circumference
   d. Patients should be weighed/measured at every visit for the first 6 months after medication initiation or change
Obesity

2. The relative risk of weight gain for the different antipsychotic medications should be a consideration in drug selection for patients who have BMI ≥ 25

3. Unless a patient is underweight (BMI < 18.5), a weight gain of 1 BMI unit indicates a need for an intervention
   Waist circumference ≥ 35 inches for women or ≥ 40 inches for men also warrants intervention

4. Interventions may include closer monitoring of weight, engagement in a weight management program, use of an adjunctive treatment to reduce weight, or changes in a patient’s antipsychotic medication
Diabetes

1. Mental health care providers should be aware of risk factors for diabetes for all patients with schizophrenia
   a. Measure baseline plasma glucose level
      (fasting preferred, but hemoglobin A$_{1c}$ acceptable)
      • Fasting glucose between 100mg/dl and 125mg/dl indicate prediabetes and prompt closer assessment and follow-up
      • Abnormal values suggest possibility of diabetes and should lead to consultation with an internist
        • Fasting glucose ≥ 126 mg/dl; random plasma glucose >200mg/dl, hemoglobin A$_{1c}$ > 6.1%
Diabetes

b. Those who have significant risk factors for diabetes should have fasting glucose level or hemoglobin A\textsubscript{1c} monitored 4 months after starting an antipsychotic and then yearly

- Risk factors include family history, BMI $\geq 25$, waist circumference $\geq 35$ inches for woman and $\geq 40$ inches for men

Patients who are gaining weight should have their fasting plasma glucose level or hemoglobin A\textsubscript{1c} value monitored every 4 months
Diabetes

c. Mental health care providers should be aware of the symptoms and signs of diabetes and should monitor patients for the presence of these symptoms at regular intervals
   • Weight change, polyuria, polydipsia

d. Mental health care providers should inform patients of the symptoms of diabetes and ask them to contact an internist or primary health care provider if these symptoms occur
e. Mental health care providers should ensure that patients with a diagnosis of diabetes are followed by a health care professional who is knowledgeable about diabetes.

The patient’s mental health care provider and primary health care provider should communicate when medication changes that may affect control of the patient’s diabetes are initiated.
Diabetes

2. If a patient presents to a mental health care provider with symptoms of diabetes, a random plasma glucose test should be performed. If the value is elevated the patient should be referred to an internist or primary health care provider. If the patient contacts the mental health care provider by telephone and describes symptoms of diabetes, the patient should be urged to seek prompt evaluation by an internist or primary health care provider.
Hyperlipidemia

1. Mental health care providers should be aware of the lipid profile of each patient with schizophrenia they treat. Psychiatrists should follow one of the following guidelines for screening and treating patients who are at high risk for cardiovascular disease:

   National Cholesterol Education Program
   U.S. Preventive Services Task Force
   
   [https://www.uspreventiveservicestaskforce.org/](https://www.uspreventiveservicestaskforce.org/)
Hyperlipidemia

a. As part of routine care, if a lipid panel is not available for a patient with schizophrenia, one should be obtained and reviewed. The lipid panel should include measurements of total cholesterol, low-density lipoprotein (LDL) and HDL cholesterol, and triglyceride levels.

b. As a group, individuals with schizophrenia should be considered to be at high risk for coronary heart disease. As a result, lipid screening should be carried out at least once every 2 years when the LDL level is normal and once every 6 months when the LDL level is greater than 130 mg/dl.
Hyperlipidemia

c. If LDL > 130 mg/dl, refer the patient to a primary care provider or an internist
   If a referral cannot be arranged, the mental health care provider should advise the patient to change his/her diet to reduce fat intake
   If the LDL level does not fall into the normal range, a cholesterol lowering drug should be initiated

d. Mental health care providers should identify patients who fulfill the criteria for the metabolic syndrome and should ensure that they are being carefully monitored by a primary health care provider
Why is Metabolic Syndrome Important?

• Metabolic syndrome is a group of risk factors including hypertension, hyperglycemia, dislipidemia, and abdominal fat

• It doubles the risk of cardiovascular disease which can lead to heart attacks and strokes

• It increases by 5 times the risk of diabetes
What is Metabolic Syndrome?

At least 3 of the following 5 conditions:

- Fasting glucose ≥100 mg/dL
  - (or receiving drug therapy for hyperglycemia)
- Blood pressure ≥130/85 mm Hg
  - (or receiving drug therapy for hypertension)
- Triglycerides ≥150 mg/dL
  - (or receiving drug therapy for hypertriglyceridemia)
- HDL-C <40 mg/dL in men or <50 mg/dL in women
  - (or receiving drug therapy for reduced HDL-C)
- Waist circumference ≥102 cm (40 in) in men or ≥88 cm (35 in) in women;
  - if Asian American, ≥90 cm (35 in) in men or ≥80 cm (32 in) in women

National Heart, Lung, and Blood Institute (NHLBI) and the American Heart Association (AHA)
Hyperlipidemia

2. Mental health providers should ensure that National Cholesterol Education Program or U.S. Preventive Services Task Force guidelines are followed for patients with abnormal cholesterol (total, LDL, HDL) and triglyceride levels. When patients with abnormal levels are identified, the patient should be referred to a primary health care provider.

Or, in the absence of such a provider, treatment may be implemented by the mental health care provider.
# TABLE 1. Recommendations for Mental Health Care Providers’ Systematic Physical Health Monitoring of Patients With Schizophrenia for Whom Antipsychotic Medication Is Prescribed

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommendation</th>
<th>Physical Health Monitoring Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight gain</td>
<td>Mental health care providers should monitor the body mass index (BMI) of patients with schizophrenia.</td>
<td>BMI measurement</td>
</tr>
<tr>
<td></td>
<td>The relative risk of weight gain for the different antipsychotic medications should be a consideration in drug selection for patients who have a BMI ≥25.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unless a patient is underweight (BMI &lt;18.5), a weight gain of one BMI unit indicates a need for an intervention.</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>A baseline measure of plasma glucose level should be obtained for all patients before starting a new antipsychotic.</td>
<td>Fasting plasma glucose level or hemoglobin A&lt;sub&gt;1c&lt;/sub&gt; value</td>
</tr>
<tr>
<td></td>
<td>Patients who have significant risk factors for diabetes and those who are gaining weight should have more frequent monitoring.</td>
<td>Fasting plasma glucose level or hemoglobin A&lt;sub&gt;1c&lt;/sub&gt; value</td>
</tr>
<tr>
<td></td>
<td>Mental health care providers should be aware of the symptoms of new-onset diabetes (including weight loss, polyuria, polydipsia) and should monitor patients for their presence at regular intervals.</td>
<td></td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>Mental health care providers should monitor the lipid profiles of all patients with schizophrenia.</td>
<td>Lipid screening—including screening of total cholesterol, low- and high-density lipoprotein (LDL and HDL) cholesterol, and triglycerides</td>
</tr>
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<td></td>
<td>As a group, individuals with schizophrenia should be considered to be at a high risk for coronary heart disease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mental health care providers should follow the National Cholesterol Education Program guidelines (<a href="http://www.nhlbi.nih.gov/about/ncepi">http://www.nhlbi.nih.gov/about/ncepi</a>) or the U.S. Preventive Services Task Force guidelines (<a href="http://www.ahcpr.gov/clinic/apmssuppl/lipidr.htm">http://www.ahcpr.gov/clinic/apmssuppl/lipidr.htm</a>) for screening and treating patients who are at high risk for cardiovascular disease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If the patient’s LDL level is &gt;130 mg/dl, the mental health care provider should refer the patient to a primary care provider or internist. If a referral cannot be arranged, the mental health care provider should advise the patient to change their diet to reduce fat intake. If the LDL level does not fall into the normal range, a cholesterol-lowering drug should be initiated.</td>
<td></td>
</tr>
</tbody>
</table>
### Treatment Recommendations

#### Statin Use for the Primary Prevention of Cardiovascular Disease in Adults: Preventive Medication

**Release Date: November 2016**

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults aged 40 to 75 years with no history of CVD, 1 or more CVD risk</td>
<td>The USPSTF recommends that adults without a history of cardiovascular disease (CVD) (i.e., symptomatic coronary artery disease or ischemic stroke) use a low- to moderate-dose statin for the prevention of CVD events and mortality when all of the following criteria are met: 1) they are aged 40 to 75 years; 2) they have 1 or more CVD risk factors (i.e., dyslipidemia, diabetes, hypertension, or smoking); and 3) they have a calculated 10-year risk of a cardiovascular event of 10% or greater. Identification of dyslipidemia and calculation of 10-year CVD event risk requires universal lipids screening in adults aged 40 to 75 years. See the “Clinical Considerations” section for more information on lipids screening and the assessment of cardiovascular risk.</td>
</tr>
<tr>
<td>factors, and a calculated 10-year CVD event risk of 10% or greater</td>
<td></td>
</tr>
</tbody>
</table>
### Treatment Recommendations

<table>
<thead>
<tr>
<th>Adults aged 40 to 75 years with no history of CVD, 1 or more CVD risk factors, and a calculated 10-year CVD event risk of 7.5% to 10%</th>
<th>Although statin use may be beneficial for the primary prevention of CVD events in some adults with a 10-year CVD event risk of less than 10%, the likelihood of benefit is smaller, because of a lower probability of disease and uncertainty in individual risk prediction. Clinicians may choose to offer a low- to moderate-dose statin to certain adults without a history of CVD when all of the following criteria are met: 1) they are aged 40 to 75 years; 2) they have 1 or more CVD risk factors (i.e., dyslipidemia, diabetes, hypertension, or smoking); and 3) they have a calculated 10-year risk of a cardiovascular event of 7.5% to 10%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults 76 years and older with no history of CVD</td>
<td>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of initiating statin use for the primary prevention of CVD events and mortality in adults 76 years and older without a history of heart attack or stroke.</td>
</tr>
</tbody>
</table>
Pooled Cohort Equations Cardiovascular Risk Calculator
http://tools.acc.org/ASCVD-Risk-Estimator/
Treatment Recommendations

Effectiveness of Medications Used to Attenuate Antipsychotic-Related Weight Gain and Metabolic Abnormalities: A Systematic Review and Meta-Analysis

Lawrence Maayan¹,², Julia Vakhrusheva² and Christoph U Correll³,⁴,⁵

¹Child Study Center, New York University School of Medicine, New York, NY, USA; ²Nathan Kline Institute for Psychiatric Research, Orangeburg, NY, USA; ³The Zucker Hillside Hospital, Psychiatry Research, North Shore-Long Island Jewish Health System, Glen Oaks, NY, USA; ⁴Albert Einstein College of Medicine, Bronx, NY, USA; ⁵The Feinstein Institute for Medical Research, Manhasset, NY, USA

Antipsychotic-related weight gain and metabolic effects are a critical outcome for patients requiring these medications. A literature search using MEDLINE, Web of Science, PsycNET, and EMBASE for randomized, open and double-blind, placebo-controlled trials of medications targeting antipsychotic-induced weight gain was performed. Primary outcome measures were change and endpoint values in
A literature search for randomized, open and double-blind, placebo-controlled trials of medications targeting antipsychotic-induced weight gain was performed. Primary outcome measures were change and endpoint values in body weight and body mass index (BMI). Secondary outcomes included ≥7% weight gain, all-cause discontinuation, change in waist circumference, glucose and lipid metabolism parameters, and psychiatric symptoms.
Across 32 studies including 1482 subjects, 15 different medications were tested:

- amantadine
- dextroamphetamine
- d-fenfluramine
- famotidine
- fluoxetine
- fluvoxamine
- metformin

- nizatidine
- orlistat
- phenylpropanolamine
- reboxetine
- rosiglitazone
- sibutramine
- topiramate
- metformin + sibutramine.
• Compared with placebo, metformin had the greatest weight loss, although these were modest and heterogeneous
  • metformin (N=7, n=334, -2.94 kg (confidence interval (CI: -4.89, -0.99))
  • Weight loss remained significant with metformin initiation after weight gain had occurred, but not when started concomitantly with antipsychotics

• In all, 5 of 15 psychopharmacologic interventions aimed at ameliorating antipsychotic-induced weight gain outperformed placebo

• None of the agents were able to entirely reverse weight gain because of antipsychotics
Summary

• People with schizophrenia die decades earlier due to preventable medical illness

• They have a higher prevalence of modifiable risk factors, specifically metabolic and cardiovascular co-morbidity – this is specifically true for those on antipsychotics

• Signs of medical illness present early, but medical care is often suboptimal

• For those on antipsychotics, more frequent metabolic monitoring is indicated, but they often have less access to care and lower quality care
Summary

• Monitoring for Metabolic Risk Factors should be performed before starting an antipsychotic, 3 months later, and yearly for those on second generation antipsychotics

• Monitoring frequency should increase and either lifestyle intervention and or medication intervention should be pursued if abnormalities are found

• The frequency of monitoring and type of intervention should be individualized by the type and severity of the abnormality and should be done with guidance of the patient’s primary medical doctor
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Thank you!

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