

## Metabolic Monitoring

### Metabolic Syndrome

Metabolic syndrome (MS) is the name given to the cluster of risk factors leading to cardiovascular disease. The criteria proposed by the National Cholesterol Education Program Adult Treatment Panel (ATPIII)<sup>1</sup> are widely used as a reference. According to the ATP III guidelines, a patient with any 3 of the risk factors in the chart (right) is considered to have MS.

ATP III Criteria for Clinical Identification of Metabolic Syndrome	
Risk Factor	Defining Level
Abdominal Obesity	Waist Circumference
• Men	• >102 cm (>40 inches)
• Women	• >88 cm (>35 inches)
Triglycerides	≥150/dl
HDL Cholesterol	
• Men	• <40 mg/dl
• Women	• <50 mg/dl
Blood Pressure	≥ 130/ ≥ 85 mmHg
Fasting Glucose	≥ 110 mg/dl

### Correlation between Metabolic Syndrome and Second-Generation Antipsychotics (SGA)\*

Many studies suggest that prevalence of diabetes and obesity among individuals with schizophrenia and affective disorders is 1-2 times higher than the general population. Treatment with some SGA's has been found to cause an increase in body weight which is associated with increased insulin resistance and concordant elevation of serum lipids.<sup>2</sup>

The currently available SGA's vary in liability for weight gain, risk for development of type II diabetes and worsening lipid profiles. Because of the variability, the ADA/APA/ACE/NAASO consensus guidelines:<sup>3</sup>

- Recommended scheduled monitoring of metabolic risk factors.
- Suggested clinicians switch the patient to a SGA medication with a lower weight gaining liability if the patient experiences a weight gain of > 5% of initial weight.

### Recommended Schedule for Monitoring Patients on Second-Generation Antipsychotics

	Baseline	4 weeks	8 weeks	12 weeks	Quarterly	Annually	Every 5 years
Personal/ Family History	X					X	
Weight (BMI)	X	X	X	X	X		
Waist Circumference	X					X	
Blood Pressure	X			X		X	
Fasting Plasma glucose**	X			X		X	
Fasting Lipid profile	X			X			X

\* Second Generation Antipsychotics include: clozapine, olanzapine, ziprasidone, risperidone, olanzapine-fluoxetine (combination)

\*\* Per recommendations from The Mount Sinai Conference: measurement of fasting plasma glucose level is preferred, but measurement of Hemoglobin A1C is acceptable if a fasting plasma glucose test is not feasible<sup>4</sup>

1. National Cholesterol Education Program. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP)Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATPIII). JAMA 2001;285: 2486-97
2. Newcomer JW, Haupt D,. The metabolic effects of antipsychotic medication. Can J Psychiatry 2006; 51:480-491
3. American Diabetes Association. Consensus development conference on antipsychotic drugs and obesity and diabetes. Diabetes Care 2004;27:596-601

## Metabolic Syndrome Monitoring Form

Patient Name \_\_\_\_\_ Date of Visit \_\_\_\_\_

### Metabolic Syndrome<sup>1</sup> considered positive for MS if 3 or more risk criteria present

Measure	Risk Criteria	Baseline	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
Abdominal Obesity	Men > 40 inches Women > 35 inches						
Triglycerides	≥ 150 mg/dl						
HDL Cholesterol	Men < 40 mg/dl Women < 50 mg/dl						
Blood Pressure	≥ 130/≥85 mmHg						
Fasting Plasma Glucose*	≥ 100 mg/dl						

\* Per recommendations from The Mount Sinai Conference: measurement of fasting plasma glucose level is preferred, but measurement of Hemoglobin A1c is acceptable if a fasting plasma glucose test is not feasible.<sup>3</sup>

Weight/BMI <sup>2</sup>	BMI ≥ 30						
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### Lipid Monitoring Results

	Baseline	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
Total						
LDL						
HDL						
TG						

### Serum Lipid Levels Reference Ranges

	Optimal/Desired <sup>1</sup>	Near/Above Optimal	Borderline High	High	Very High
Total	< 200		200-239	≥ 240	
LDL	< 100	100-129	130-159		≥ 190
HDL	< 40 men < 50 women			≥ 60	
TG	<150		150-199	200-499	≥ 500

1. National Cholesterol Education Program. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP III). JAMA 2001;285: 2486-97.

2. Other obesity indicators not in the ATP III recommendations: Actual Weight or BMI (Weight/height in kg/m<sup>2</sup> overweight 25-29, Obese ≥30)

3. Marder SR, Essock SM, Miller AL, et al. Physical health monitoring of patients with schizophrenia. Am J Psychiatry 2004;161:1334-1349