

General Procedures for Monitoring Side Effects of Antipsychotic Medication in Children and Adolescents

Extrapyramidal Side Effects

- Monitor for extrapyramidal side effects (EPS) associated with antipsychotic use. Scales for assessing for EPS:
 - ◆ The Abnormal Involuntary Movement Scale (AIMS)
 - ◆ The Extrapyramidal Symptom Rating Scale (ESRS)
 - ◆ Dyskinesia Identification System: Condensed User Scale (DISCUS)
- Links to measures listed above are available at <https://floridabbcenter.org/>.

Metabolic Syndrome, Prediabetes, and Type 2 Diabetes Mellitus

- Monitor for metabolic syndrome, prediabetes, and Type 2 Diabetes Mellitus (DM) when prescribing atypical antipsychotics.
- Regularly review the continued need for antipsychotic medication and consider discontinuation, if appropriate.
- Metabolic Syndrome Diagnosis:

Children ≤10 years

- ◆ In children ≤10 years old, metabolic syndrome cannot be diagnosed because cut-offs for blood pressure, fasting blood sugar, triglycerides, and fasting lipids are not well defined.
- ◆ Child is at risk for metabolic syndrome if child has central obesity (waist circumference is >90th percentile).

Children/Adolescents >10 years

- ◆ There are various criteria for the diagnosis of metabolic syndrome. According to the International Diabetes Federation (IDF), Metabolic syndrome is present if the child has central obesity [waist circumference is >90th percentile for age (or adult cut-off if lower)] plus *any two* of the following four risk factors:
 - ◇ Blood pressure (BP): ≥130 millimeters of mercury (mmHg) systolic, ≥85 mmHg diastolic, or treatment of previously diagnosed hypertension
 - ◇ Fasting blood glucose >100 milligrams per deciliter (mg/dL) or previously diagnosed type 2 diabetes
 - ◇ Fasting triglycerides ≥150 mg/dL
 - ◇ HDL <40 mg/dL
 - ◇ Previous diagnosis of Type 2 Diabetes
- Prediabetes Diagnosis:
 - ◆ Fasting glucose from 100-125 mg/dL
 - OR
 - ◆ Hemoglobin A1c between 5.7% and 6.4%
- Monitor for prediabetes and Type 2 Diabetes Mellitus (DM) in all children <18 years who are overweight or obese and have *one or more* of the following risk factors (refer to Box 1 below):

Box 1.

American Diabetes Association Risk-Based Screening for Type 2 Diabetes or Prediabetes in Asymptomatic Children and Adolescents (<18 years) in a Clinical Setting	
Criteria:	
<ul style="list-style-type: none"> ◆ Overweight (BMI >85th percentile for age and sex, weight for height >85th percentile, or weight >120% of ideal for height [Level A evidence]) 	
Plus one or more additional factors based on the strength of their association with diabetes as indicated by evidence grades:	
<ul style="list-style-type: none"> ◆ Maternal history of diabetes or gestational diabetes during the child's gestation [Level A evidence] ◆ Family History of type 2 diabetes in first- or second-degree relative [Level A evidence] ◆ Race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander) [Level A evidence] ◆ Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome, or small-for-gestational-age birth weight) [Level B evidence] 	

Notes:

- Overweight is defined as BMI >85th percentile for age and sex, weight for height >85th percentile or weight >120% of ideal for height.
- Obese is defined as BMI > 95th percentile for age and sex
- The American Diabetes Association recommends testing hemoglobin A1c every 3 years beginning at age 10 or onset of puberty in children who are overweight and have two or more risk factors for metabolic syndrome or Type 2 DM.
- For individuals receiving antipsychotic medications, the American Diabetes Association and American Psychiatric Association recommend metabolic monitoring as noted in Table 2 below.
- If metabolic abnormalities are present, refer to the primary care physician for further evaluation/treatment and integrate care.

Table 2.

American Diabetes Association/American Psychiatric Association Guidelines for Metabolic Monitoring in Recipients of Antipsychotic Medications							
Parameter	Monitoring Frequency						
	Baseline	Week 4	Week 8	Week 12	Quarterly	Annually	Every 5 years
Medical history*	X					X	
Weight (BMI)	X	X	X	X	X		
Waist circumference	X					X	
Blood pressure	X			X		X	
Fasting glucose or hemoglobin A1c	X			X		X	
Fasting lipids (HDL, LDL, triglycerides, total cholesterol)	X			X			X

*Notes: Medical history includes personal and family history of obesity, diabetes, hypertension, and cardiovascular disease. More frequent assessments may be warranted based on clinical status.

Box 2.

American Diabetes Association Criteria for Diagnosis of Diabetes

- ◆ Fasting plasma glucose (FPG) ≥ 126 mg/dL (7.0 mmol/L). Fasting is defined as no caloric intake for at least 8 hours.

OR

- ◆ 2 hour plasma glucose (PG) ≥ 200 mg/dL (11.1 mmol/L) during oral glucose tolerance test (OGTT). The test should be performed as described by the World Health Organization (WHO), using a glucose load containing the equivalent of 75-grams anhydrous glucose dissolved in water.

OR

- ◆ Hemoglobin A1C $\geq 6.5\%$ (48 mmol/mol).

Note: The test should be performed in a laboratory using a method that is National Glycohemoglobin Standardization Program (NGSP) certified and standardized to the Diabetes Control and Complication Trial (DCCT) assay.

OR

- ◆ In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥ 200 mg/dL (11.1 mmol/L).

Notes: In the absence of unequivocal hyperglycemia, results should be confirmed by repeat testing. The epidemiological studies that form the basis for recommending A1c to diagnose diabetes includes only adult populations.

Prolactin Monitoring

- There is a relationship between prolactin elevation and atypical antipsychotics. Although evidence does not support need for routine monitoring of prolactin levels in asymptomatic youths, surveillance for signs/symptoms of prolactin elevation (e.g., gynecomastia, galactorrhea, irregular menses) is recommended.
- When symptoms of elevated prolactin develop, consider decreasing the dose of the atypical antipsychotic, switching to a different atypical antipsychotic, or discontinuing medication.

For a full list of references, visit <https://floridabbcenter.org/>.