DIVISION OF PUBLIC AND BEHAVIORAL HEALTH
NEVADA ADULT MENTAL HEALTH SERVICES
SCOPE: Medical Staff Department

SUBJECT:

Metabolic Syndrome Evaluation and Management

NUMBER:

EFFECTIVE DATE:

03/4/2020

REVIEW DATE:

03/4/2022

APPROVED BY:

/s/ Leon Ravin, MD State-wide Psychiatric Medical Director

SUPERSEDES:

New

I. PURPOSE: to improve awareness of the DPBH medical staff of the metabolic side effects associated with the prescription of second-generation antipsychotic medications and provide guidelines for evaluation and management of the metabolic syndrome consistent with evidence-based practice.

II. DEFINITIONS:

1. Based on National Cholesterol Education Program 2005 guidelines, metabolic syndrome is defined as the presence of any 3 of the 5 of the following risk criteria:

    a. Obesity;
    b. Hypertension;
    c. Low HDL cholesterol;
    d. Hyperlipidemia;
    e. Glucose intolerance.

III. PROCEDURE:

1. The DPBH medical staff is expected to

    a. Maintain awareness of the metabolic side effects associated with the prescription of second generation antipsychotic medications;

    b. Detect metabolic disturbances such as metabolic syndrome, insulin resistance, dyslipidemia as early as possible among mentally ill patients treated with second generation antipsychotic medications;

    c. Comply with the consensus guidelines jointly developed by the American Psychiatric Association, the American Diabetes Association, the American Association of Clinical Endocrinologists, and the North American Association for the Study of Obesity.

2. Assessment: Measures should be obtained before, or as soon as clinically feasible after, the initiation of any antipsychotic medication. These include:

    a. Personal and family history of obesity, diabetes, dyslipidemia, hypertension, cardiovascular disease;

    b. Weight and height; so that BMI can be calculated;

    c. Waist circumference;

    d. Blood pressure;

    e. Fasting blood sugar (FBS);

    f. Fasting lipid profile.

3. Metabolic Syndrome Parameters include:

    a. Elevated Body Mass Index (BMI)

(i)	< 20	Underweight
(ii)	20 to 24.9	Normal weight
(iii)	25 to 29.9	Overweight
(iv)	30 to 34.9	Grade I obesity
(v)	35 to 39.9	Grade II obesity
(vi)	40 and above	Grade III obesity

b. Increased waist circumference (central adiposity) be measured at the level of the umbilicus

(i) Women: > 35 inches (88 cm)
(ii) Men: > 40 inches (102 cm)

c. Hypertension measured twice at rest with measurements separated by at least 30 minutes

(i) Classic: > 140/90 mm Hg
(ii) Current: > 130/85 mm Hg

d. Dyslipidemia

(i) Total cholesterol	>	200 mg/dl
(ii) LDL cholesterol	>	130 mg/dl
(iii) Triglycerides	>	150 mg/dl
(iv) HDL cholesterol in women	<	50 mg/dl
(v) HDL cholesterol in men	<	40 mg/dl

e. Glucose intolerance

(i) Intolerance: FBS 100 to 125 mg/dl
(ii) DM: FBS > 125 mg/dl or HBgA1C > 6.0%

4. Recommendations:

a. Medical Staff should educate individuals, family members and caregivers to the health risks associated with excess weight. They should emphasize the risks of developing diabetes and dyslipidemia when therapy with second generation antipsychotics is initiated.

b. Individuals should be encouraged to monitor and chart their weight.

c. Nutrition and physical activity counseling should be provided for all individuals who are overweight or obese (BMI > 25) or who present with waist circumference > 35 inches for a woman and > 40 inches for a man.

d. Referral to a healthcare professional or program with expertise in weight management may also be appropriate.

e. Health care professionals, served individuals, family members and caregivers should be aware of the signs and symptoms of diabetes, especially those with acute decompensation of diabetes such as diabetic keto-acidosis (DKA).

f. Mental health providers should ensure that patients with diagnosis of diabetes (FBS >125mg/dl) are followed by a health care professional who is knowledgeable about diabetes. Close communication is necessary between primary care and mental health care providers especially when changes in medication may affect glucose control. These individuals should carry diabetes identification.

g. Mental health providers should be aware of the National Cholesterol Education Panel/ Adult Treatment Panel III guidelines-NCEP/ATP III report for screening and treatment of dyslipidemia and refer their patients to a primary care provider or an internist for follow-up. ATP III recommends a two-step approach to cholesterol management; priority goes to attaining the goal for LDL-cholesterol; thereafter emphasis shifts to management of the metabolic syndrome and other lipid risk factors.

h. Mental health providers should identify individuals who fulfill the criteria for the metabolic syndrome and should ensure that a primary care provider closely monitors them.

5. Initiation of treatment:

a. Potential for weight gain and increase coronary heart disease risk factors should be considered in the choice of any antipsychotic medication.

b. For persons with, or at higher risk for diabetes, dyslipidemia and metabolic syndrome and in those treated with medications that may increase these risks (e.g., Valproic acid, lithium, Depo-Provera) it may be preferable to initiate treatment with a second generation antipsychotic that appears to have lower propensity for weight gain, glucose intolerance and lipid disturbances.

6. On-going treatment:

a. Monitoring:

(i) Personal and family history should be reassessed annually.

(ii) Mental health providers should monitor weight and chart BMI for every patient at 4, 8,12 weeks after initiating second generation antipsychotic therapy, and once the weight stabilizes at least quarterly thereafter at the time of routine visits or more often if the patient is overweight.

(iii) Waist measurements should be taken annually.

(iv) Fasting glucose (FSB) should be followed at 12 weeks, annually or more frequently for those who have a higher baseline risk for diabetes. During each visit, a patient treated with a second generation antipsychotic should be asked about polydipsia and polyuria. Hemoglobin A1c should be considered for those with unstable FBS findings.

(v) Blood pressure should be measured at 12 weeks, annually or more frequently for those who have a higher risk for hypertension.

(vi) Fasting lipids testing should be performed at 12 weeks and at 5-year intervals or more frequently if clinically indicated. As a group, individuals with schizophrenia should be considered at high risk for coronary heart disease; as a result, in these patients, lipids screening should be carried out at least once every year when LDL level is normal, and once every 6 months when LDL level is greater than 130 mg/dl.

b. Recommendations for intervention:

(i) A gain of one BMI unit in a normal-weight or overweight patient should lead to an intervention. Interventions may include extensive nutritional counseling, initiation of a personal exercise program, use of an adjunctive treatment to reduce weight (such as Orlistat). Some authors also have reported Topiramate and metformin as effective in reducing weight.

(ii) Referral to a healthcare professional or program with expertise in weight management may also be appropriate.

(iii) Mental health care givers should also initiate an intervention if the individual's waist circumference is 35 inches or greater for a woman and 40 inches or greater for a man.

(iv) All individuals who develop diabetes (FBS >125mg/dl) when on second generation antipsychotic medication should be referred to an ADA-recognized diabetes self-management education program if available. Referral to a clinician with experience in diabetes treatment is recommended. These patients should carry diabetes identification.

(v) Consultation with an internist or other primary care physician is required for patients presenting with symptomatic or severe hyperglycemia (random glucose values > 300mg/dl) or symptomatic

hypoglycemia. The presence of DKA symptoms requires immediate evaluation and treatment.

(vi) Mental health providers should ensure that NCEP III guidelines are followed for all individuals who develop dyslipidemia while on antipsychotic medication. A referral to a primary care physician is recommended. If second generation antipsychotic treatment is continued, then treatment with statin and/or fibrinate medication should be considered.

c. Change of second generation antipsychotic medications:

(i) If a individual gains > 5% of his/her initial weight at any time during therapy, one should consider switching the second generation antipsychotic. In such situation the panel recommends cross-titration to be the safest approach. The profile of the subsequent drug will determine the initial dose and escalating strategy. Particular consideration should be given before discontinuing Clozapine because of the potential for serious psychiatric sequelae.

(ii) In case of worsening glycemia while on antipsychotic medication, experts recommend considering switching for an second generation antipsychotic that has not been associated with significant weight gain or diabetes.

(iii) In case a patient develops hyperlipidemia (LDL > 130 mg/dl) or dyslipidemia of the metabolic syndrome while on antipsychotic medication, experts recommend considering switching for a second generation antipsychotic that has not been associated with significant dyslipidemia.

7. Other considerations:

a. Benefits of modest weight loss:

(i) Increased life expectancy
-2.2lb weight loss increased survival by 3 to 4 months
-2.2lb weight loss could restore 35% of reduction in life expectancy

(ii) Loss of 15-30lb (10%) in obese subjects reduced glucose by 29 g/dl and HbA1c by 1.1%

(iii) Loss of 10lb (5%) reduced diastolic blood pressure by 5 %

(iv) Loss of 6 lb (3%) in obese men decreased:
-Total cholesterol by 17 %

-LDL-C by 9%
-Triglycerides by 35 %

b. Risk Factors for Metabolic Syndrome:

(i) High fat/high sugar diet.

(ii) Sedentary lifestyle.

(iii) Female gender. Risk increases especially post menopause.

(iv) Ethnicity. Latino and African-American groups show elevated risk that may be related to both genetic and cultural subfactors.

(v) Chronic mental illness. Elevated risk related to poor diet, sedentary lifestyle, and exposure to certain medications.

(vi) Increasing age. The prevalence of metabolic syndrome increases in both sexes after age 65 years.

c. Metformin Longitudinal Effects on Metabolic Syndrome based on Double-blind RCT 24-week trial of 25 olanzapine-treated patients Metformin 2000 mg/day v. placebo

(i) Weight gain 5.5 lb. v. 12.8 lb. (P = 0.05)
(ii) BMI 0.85 increase v. 2.02 increase (p = 0.045)

d. Comparison of metabolic effects of atypical antipsychotics

Drug	Weight gain	Dyslipidemia	Hyperglycemia
Clozapine	+++	+++	+++
Olanzapine	+++	+++	+++
Risperidone	++	+	+
Quetiapine	++	++	++
Ziprasidone	+/0	+/0	+/0
Aripiprazole	+/0	+/0	+/0
Iloperidone[a]	++	+/0	+/0
Paliperidone	+	+	+
Asenapine[a]	+/0	+/0	+/0
Lurasidone[a]	+/0	+/0	+/0

+++: significant; ++: intermediate; +: low; +/0: low or neutral
[a]Limited data and/or long-term data are not available
Source: References 5,7

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