Type 2 Diabetes Mellitus and Cardiovascular Health Issues

Any of the following:

- Fasting plasma glucose ≥126 mg/dL

  **Note: Fasting is defined as no caloric intake for ≥8 hours. In absence of unequivocal hyperglycemia, result to be confirmed by repeat testing.*

- 2-hour plasma glucose ≥200 mg/dL during oral glucose tolerance test with glucose load containing equivalent of 75 g anhydrous glucose dissolved in water

  **Note: In absence of unequivocal hyperglycemia, result to be confirmed by repeat testing.*

- Hemoglobin A1c ≥6.5%
- Random plasma glucose ≥200 mg/dL in individuals with symptomatic hyperglycemia or hyperglycemic crisis

Diagnostic Criteria for Hypertension

- Normal blood pressure: <120/<80 mmHg
- Stage 1: 130–139 mmHg systolic or 80–89 mmHg diastolic
- Stage 2: ≥140 mmHg systolic or ≥90 mmHg diastolic

**Note: Prior to diagnosing hypertension, use an average based on two or more readings obtained on two or more occasions to estimate the individual's blood pressure. Out-of-office and self-monitoring of blood pressure measurements are recommended to confirm the diagnosis of hypertension.*

ADA Target Goals and Atherosclerotic Cardiovascular Disease (ASCVD) Risk Calculator

Note: Strongly recommend coordination of care between all providers to facilitate optimal outcomes.

The following recommendations were adapted from the American Diabetes Association (ADA).

Box 3.

ADA Target Goals for Blood Pressure, Lipid, and Glycemic Control

Blood pressure: Systolic <140 mmHg*; Diastolic <90 mmHg

Lipids: LDL-C <100 mg/dL**

After age 10 years old, the addition of a statin is suggested in patients who, despite medical nutrition therapy and lifestyle changes, continue to have LDL cholesterol >160 mg/dL with no cardiovascular risk factors or LDL cholesterol >130 mg/dL with one or more cardiovascular disease risk factors.***

Hemoglobin A1c: <7%‡ (treatment goal)

**Lower systolic blood pressure (SBP) goals may be appropriate based on individual patient characteristics and therapeutic response.*

***A lower LDL-C goal of <70 mg/dL using a high dose of a statin may be appropriate in persons with overt cardiovascular disease (CVD). See table below for further recommendations regarding lipid screening and management.*

****Be cautious of contraindications to statin therapy (e.g. pregnancy) and drug-drug interactions with psychiatric medications.*

‡More or less stringent glycemic goals may be appropriate for individual patients. Individualize goals based on diabetes duration, age/life expectancy, comorbidities, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient characteristics.

Note: mmHg= millimeters of mercury; mg/dL= milligrams per deciliter; LDL-C= low density lipoprotein.

Note: If statin therapy is initiated, monitor for side effects including, but not limited to statin-induced myopathy and impaired liver function.

Atherosclerotic Cardivascular Disease (ASCVD) Risk Calculator

The ASCVD risk calculator calculates the 10-year risk of heart disease or stroke using the ASCVD algorithm published in the 2013 American College of Cardiology (ACC)/American Heart Association (AHA) Guideline on the Assessment of Cardiovascular Risk for individuals between 40-79 years old. The calculator assumes no prior history of a heart attack or stroke. Currently, there is insufficient data to reliably predict risk for individuals under 40 years or older than 79 years of age, or those with a total cholesterol greater than 320 mg/dL.

The 2018 American College of Cardiology/American Heart Association Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults redefines high blood pressure as >130/80 mmHg and recommends starting anti-hypertensives based on an ASCVD risk score of >10%.

Link to ASCVD Risk Calculator: ***http://tools.acc.org/ASCVD-Risk-Estimator-Plus/#!/calculate/estimate/***

QT Prolongation Associated with Psychotherapeutic Medications

QT Interval Prolongation

The QT interval represents electrical depolarization and repolarization of the ventricles, and the QTc is this value corrected for the patient's heart rate. In clinical trials, a prolonged QTc interval of greater than 500 milliseconds during therapy has been a threshold for concern. Clinically, a QTc interval above 470 milliseconds in females and above 450 milliseconds in males is considered prolonged, and individual changes in QTc intervals of 30 to 60 milliseconds from baseline should heighten suspicion of increased risk of arrhythmias. Though data are limited, a prolonged QTc interval appears to be more common with tricyclic antidepressants than selective-serotonin reuptake inhibitors (SSRIs). Antipsychotic medications have also been reported to be associated with QTc interval prolongation, particularly with ziprasidone and thioridazine, and to a lesser extent with haloperidol and quetiapine.

ECG monitoring is recommended when administering antipsychotic medications in the presence of co-existing risk factors for QT interval prolongation such as older age, electrolyte disturbances (e.g., hypokalemia, hypomagnesemia), family history of sudden death, personal history of cardiac murmur, and/or use of concomitant medications known to prolong the QT interval. See table below for risk factors to evaluate for during initial assessment when considering use of antipsychotics or other medications with QT prolongation.

Cardiovascular Risk Associated with Antipsychotic Use in Youth Under 24 Years

- More frequent ECG monitoring may be warranted in youth under 24 years old prescribed antipsychotic medications compared to adult populations.
- A retrospective cohort study by Ray, et al. (2019) reported that antipsychotic medication use at doses greater than 50 mg chlorpromazine equivalents in youth ages 5 to 24 years was associated with increased risk of unexpected death compared to the control group of youth prescribed ADHD medications, antidepressants, or mood stabilizers. The adjusted and unadjusted incidence of death in youth prescribed lower-dose antipsychotics (50 mg or lower chlorpromazine equivalents) did not differ significantly from the control group.

Note: Strongly recommend coordination of care between all providers to facilitate optimal outcomes.

Box 4.

Risk Factors Associated with QT Prolongation*

Evaluate for:

- Older age (>65 years)
- Electrolyte disturbances (e.g., hypokalemia, hypomagnesemia)
- Congenital long QT syndrome
- Family history of sudden death
- Personal history of heart murmur, shortness of breath with exertion, episodes of tachycardia at rest, irregular heartbeats
- Personal history of syncope
- Known cardiac disease (myocardial ischemia, congestive heart failure, cardiac arrhythmias, bradycardia)
- Concomitant use of other medications known to prolong QT interval
- Concomitant medications known to inhibit metabolism of antipsychotic medications (i.e., cause increased serum concentrations of antipsychotic medications)
- History of liver disease
- Endocrine and metabolic disorders
- Central nervous system injury (e.g., stroke, infection, trauma)

**Adapted from Shah AA, el al (2014).*