Type 2 Diabetes

Type 2 diabetes is on the rise in children and adolescents. The disease is more aggressive in children and adolescents than it is in adults (faster progression, more likely to require insulin therapy, earlier complications).

The following measures indicate that a child has type 2 diabetes:
1. Hemoglobin A1C ≥6.5%
2. Fasting glucose ≥126 mg/dL
3. Two-hour value post glucose load on oral glucose tolerance testing (OGTT) or random glucose >200mg/dL

Type 2 diabetes can develop with no symptoms or can have a severe presentation such as diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic state (HHNS).

ASSESSMENT
As part of a routine overweight/obesity screening, perform history and physical exam.
Assess for:
• Family history of type 2 diabetes
• Acanthosis nigricans, an indication of insulin resistance

If concerned for diabetes, order labs. The optimal screening is a hemoglobin A1C +/- a fasting glucose test or random glucose test. Oral glucose tolerance testing could also be considered to assess glucose tolerance. Screening labs should be ordered for patients with BMI over 95th percentile or 85th percentile with risk factors such as family history or race/ethnicity.

MANAGEMENT/TREATMENT
Type 2 diabetes in children should be managed by a pediatric endocrinologist.

Lifestyle counseling is the mainstay of treatment, but because the disease is aggressive in children, medication is usually initiated at diagnosis. Metformin is the first line of treatment in all ages, but GLP-1 agonist therapies also are approved in children. Insulin may also be needed.

WHEN TO REFER
Contact the Division of Endocrinology via Priority Link with the first set of abnormal labs.
If child is ill appearing, send to the emergency department.

For urgent issues or to speak with the specialist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.

For additional copies of this tool, or for more information, please contact the Physician Outreach and Engagement team at Cincinnati Children’s.
Type 2 Diabetes

Perform HPE (History and Physical Exam) as part of Routine Overweight/Obesity Screening

- Family history of type 2 diabetes
- Acanthosis nigricans, an indication of insulin resistance

If concerned for prediabetes or diabetes, order labs. The optimal screening is a hemoglobin A1C +/- a fasting glucose test or random glucose test. Oral glucose testing (OGTT) can also be used for assessing glucose tolerance.

**Normal**
- A1C <5.7%
- Fasting glucose <100 mg/dL
- Two-hour value post-glucose load on oral glucose tolerance test (OGTT) <140 mg/dL

Manage overweight/obesity in PCP office. Encourage healthy lifestyle, physical activity guidelines, etc. Trend weight and repeat screening labs at 6–12 months or refer to Healthworks for more intensive management services.

Refer to the Department of Endocrinology if glucose status worsens or more intensive interventions are needed.

**Prediabetes**
- A1C 5.7–6.4%
- Fasting glucose ≥100 mg/dL but <126 mg/dL
- Two-hour value post-glucose load on oral glucose tolerance test (OGTT) ≥140 mg/dL

**Diabetes**
- A1C ≥6.5%
- Fasting glucose ≥126 mg/dL
- Two-hour value post-glucose load on OGTT or random glucose >200 mg/dL

**RED FLAGS**
- Lab criteria met as outlined above
- Dehydration
- Polydipsia
- Polyuria (especially bed wetting or getting up overnight to use the restroom)

Manage in the PCP setting

- Schedule follow-up for lifestyle counseling with a focus on meeting physical activity guidelines and reducing simple sugars in the diet.
- Office visits and trend hemoglobin A1C and fasting glucose every three to six months if either measure was abnormal.

Glucose status worsening despite interventions? OR Patient would benefit from full assessment and more intensive lifestyle coaching?

**Refer highest-risk patients** to the Division of Endocrinology at 513-636-4744.

Highest-risk patients have a strong family history of any diabetes; have been diagnosed with non-alcoholic fatty liver disease (NALFD) or suspected NAFLD with elevated ALT; and/or have a hemoglobin A1C >6%.

**Refer lower-risk patients** who want to make lifestyle changes to the Center for Better Health and Nutrition (Healthworks!) at 513-636-4305.

Patients will see a physician who can manage the prediabetes with lifestyle changes and/or medication; a dietitian; and an exercise physiologist.

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.