



Guideline for Disease Management in Correctional Settings

ADOLESCENT DIABETES

Recommended Resources to Support Evidence-Based Practice and Quality Improvement

NCCHC issues guidelines to assist correctional health care clinicians in evidence-based decision making. For specific clinical practice guidelines and recommendations, please see the resources listed on page 4.

Introduction

Although clinical guidelines are important decision support for evidence-based practice, to leverage the potential of guidelines to improve patient outcomes and resource use, NCCHC recommends that health care delivery systems also have components including primary care teams, other decision support at the point of care (such as reminders), disease registries, and patient self-management support. These components have been shown to improve outcomes for patients with chronic conditions. In addition, we recommend establishment of a strategic quality management program that supports ongoing evaluation and improvement activities focused on a set of measures that emphasize outcomes as well as process and practice. For information on the chronic care model, model for improvement, and outcomes measures, see the resources listed on page 4.

Adolescent Diabetes Care in Corrections

The best glucose control results are achieved when the adolescent develops a good understanding of his or her responsibility with regard to diet, exercise, timing of food intake relative to insulin administration, and glucose monitoring. Clinicians must understand their responsibilities to facilitate dietary adherence, access to finger-stick glucose monitoring, access to exercise, and timing of insulin administration. They also have a responsibility to help the patient understand the disease such that they work as a team to achieve the desired clinical outcome. The programs that achieve the best outcomes do so by creating a multidisciplinary treatment team consisting of the physician and other health staff, the dietitian, the patient, and correctional staff.

The long-term treatment goal is to achieve and maintain glycosylated hemoglobin A1C and fasting blood sugar in the normal range. The methods to achieve this differ for the two types of diabetes.

Type 1 Diabetes. Insulin will be required. Given the potential of morbidity for complication of moderately severe or severe hypoglycemia (with loss of consciousness and seizures), it is safer to set the goal in the upper range of normal. This is particularly true for children who are unaware of or have recurrent episodes of hypoglycemia; those with severe coronary artery disease, severe retinopathy, or renal failure; and those who lack motivation to participate actively in managing their disease. The risks of hypoglycemia must be evaluated for each patient, and the risks and benefits of tight control must be discussed before treatment. This should result in a balance between the risks of hypoglycemia and the long-term reduced vascular complications of diabetes, and reduce the risk of developing ketoacidosis.

Type 2 Diabetes. The objective may be achieved by a combination of weight management through nutrition therapy, exercise, and pharmacologic management. A weight loss of 5% to 10% has a beneficial effect on overall health and diabetes. An additional goal is to obtain 150 minutes a week of physical activity. However, many patients have difficulty losing weight. When diet and exercise are insufficient to normalize glucose metabolism, appropriate medication (including insulin for patients who cannot be controlled with oral medications) should be used. If possible, body mass index should be monitored regularly, every 3 to 6 months.

The initial history should include age of onset of diabetes or symptoms suggesting diabetes, hospitalizations for diabetes or its complications, use of insulin and/or oral hypoglycemic agents, current medications, and risk factors such as family history, smoking history, use of atypical antipsychotics, polycystic ovary disease (girls), hypertension history, history of elevated cholesterol, and usual diet.

The physical examination should include a complete set of vital signs, including height and weight, with a special focus on the eyes, thyroid gland size, abdomen, skin (acanthosis nigricans, striae, buffalo hump, moon facies, and for girls excess body hair), and neurological tests. Signs and symptoms of hypoglycemia can be confused with intoxication or withdrawal from drugs or alcohol.

All patients known to have diabetes should have a capillary blood glucose test within 1 to 2 hours of arrival in the facility. Baseline laboratory tests on the initial assessment, if not done within the previous year, include A1C, fasting lipid profile (triglycerides, HDL, LDL, total cholesterol), microalbuminuria (unless gross proteinuria on urinalysis), thyroid function (usually TSH) if indicated, electrocardiogram if patient is hypertensive, serum creatinine and liver enzyme levels, and fasting glucose.

Initial diagnosis of type 1 diabetes is based on a history of polyuria, polydipsia, polyphagia, and weight loss. Elevated blood glucose may be associated with glycosuria, ketonuria, and ketonemia. A glucose tolerance test is seldom required. Type 2 diabetes is becoming more common in younger children. It should be suspected in children who are overweight or have signs and symptoms of metabolic syndrome. Differentiating type 1 from type 2 can occasionally be problematic. Laboratory studies that may help include islet cell antibodies and c-peptide. A1c may be used for diagnosis.

Patients whose diabetes is well-controlled should be seen every 3 months and more frequently if needed. Self-monitored finger-stick blood glucose tests should be performed 4 times a day, or more if needed, for insulin-dependent patients in accordance with the treatment plan, and initially in non-insulin dependent patients. A1C and a fasting blood glucose, or just an A1C, should be measured at regular intervals (every 3 months) for all diabetes patients. Decisions about ongoing daily testing with type 2 diabetes depend on test results during the first month of testing. Adolescents who resist finger-stick testing may benefit from negotiating alternatives, such as alternating the time of testing (e.g., morning and before dinner on one day, before lunch and at bedtime the next). For type 2 diabetes, if glycemic control has been good and A1C treatment goals are being met, then fasting blood sugars can be measured every 6 months.

Assessing Therapeutic Management

At each follow-up visit, the clinician should assess and document the patient's condition as defined below. Use of standard definitions does not eliminate the clinician's obligation to tailor the assessment and treatment plan to each patient, with justification in the clinical progress notes.

The following guidelines are suggested for defining degree of control for adolescents:

- Good control: A1C at or below the upper limit of the laboratory normal (generally 7.0% or less)
- Fair control: A1C no more than 2 percentage points above the upper limit of the laboratory normal (generally 7.1% to 9.0%)
- Poor control: A1C more than 2 percentage points above the upper limit of the laboratory normal (generally above 9.0%)

The following guidelines are suggested for defining diabetes status for adolescents:

- Improved status: A1C has decreased, or the average of finger-stick glucose levels is below 180 after eating and 80-120 when fasting or before meals; for type 2 diabetes, A1C has decreased, or there has been an intentional weight loss of 5% or more due to diet and exercise if the patient is overweight
- Unchanged status: A1C and the average of finger-stick levels are the same as previously recorded, and the weight is relatively unchanged

- Worsened status: A1C or the average of finger-stick levels has increased to above the upper limit goal; for type 2 diabetes, there has been a weight gain of 5% or more if the patient is overweight

Any decrease in degree of control is probably related to one of the following problems:

- Inadequate patient understanding of or compliance with parts of the treatment regimen
- Institutional obstacles to compliance
- Inconsistent instruction to the patient from different medical staff
- Factors such as age, motivation, or medication

Managing Diabetes in Correctional Settings

Access to health or medically trained operational staff should be ensured in all care, but especially in the care of insulin-dependent patients. It is important for health staff to assess the timing of services such as meals and pill lines and to develop treatment strategies that both complement the institutional schedule and appropriately challenge it when necessary. To prevent hypoglycemia, there should be minimal delay between dosing of rapidly acting insulin and mealtime. Uncontrolled type 1 diabetes patients require extensive health care resources and institutional flexibility to facilitate self-management. In general, incarcerated adolescents with diabetes require the availability of 24-hour nursing care. When a patient is on insulin, someone who can administer glucagon should always be available.

Regular exercise is an important adjunct treatment for all patients with diabetes, and good glycemic control is difficult without daily exercise. Clinicians should work with their patients to ensure that they have adequate exercise regimens, generally a minimum of 160 minutes a week.

Medical nutrition may be the most difficult area to manage in correctional settings, especially with regard to providing acceptable “heart-healthy” menu alternatives. A heart-healthy menu often facilitates the dietary goals of the diabetes treatment plan. In institutions without standardized diabetic meals, extensive education regarding appropriate food intake should be considered.

Patient self-management is essential for successful treatment of diabetes. Although control of syringes and other sharps is paramount in correctional settings, efforts should be made to allow patients to conduct self-testing (supervised or unsupervised) and to prepare and administer their insulin under supervision. As children with diabetes progress through developmental stages, their responsibility for self-care should increase. Education about diabetes should be ongoing, culturally sensitive and developmentally appropriate.

Medical staff should be trained in the use of all equipment, schedules, insulin types, and procedures being used by patients. All staff should be trained to recognize the signs and symptoms of hypoglycemia, hyperglycemia, and metabolic decompensation, and understand the use of glucagon.

Quality Improvement Measures

The following quality improvement measures are suggested, but they are not intended to be a complete list necessary to ensure a successful diabetes management program in a juvenile correctional setting. We recommend that the improvement measures for a patient population be reported at a facility level and at a provider or team level.

- When the level of control is categorized as fair or poor, or the status is listed as worsened, the treatment plan includes a strategy for gaining control by working with the patient.
- Percentage of patients with completed lipid screens
- Percentage of patients with abnormal lipid screens who are monitored annually
- Percentage of patients with proteinuria who have BUN/creatinine performed annually
- Percentage of patients with annual tests of microalbuminuria

- Percentage of patients with dilated fundoscopic eye examination performed annually by an appropriately trained specialist (e.g., ophthalmologist or optometrist)
- Documented participation of a pediatric endocrinologist in the initial management of all patients with type 1 diabetes and ongoing participation at least every 6 months for patients who are not well controlled
- Regular chronic illness clinic visits at least every 3 months or more often for patients under fair or poor control
- Percentage of patients with 1C checked every 3 months (6 months for well-controlled patients)
- Percentage of type 1 patients with documented daily blood sugar checks
- Percentage of patients with annual neuropathy examinations every 3 months
- Percentage of patients with documented examination for lipohypertrophy or lipoatrophy every 3 months in type 1 diabetes patients who inject insulin

Recommended Resources to Support Evidence-Based Practice and Quality Improvement

- RESOURCE Standards of Medical Care in Diabetes—2010
SOURCE American Diabetes Association
URL http://care.diabetesjournals.org/content/33/Supplement_1/S11.extract
- RESOURCE Guiding Principles for Diabetes Care: For Health Care Professionals (April 2009)
SOURCE National Diabetes Education Program, U.S. Department of Health and Human Services
URL http://www.ndep.nih.gov/media/guidprin_HC_eng.pdf
- RESOURCE Chronic Care Model: Meet the Needs of Specific Populations
SOURCE Based on the model developed by Ed Wagner MD, MPH, MacColl Institute for Healthcare Innovation, Group Health Cooperative of Puget Sound, and the Improving Chronic Illness Care program. Available from the Institute for Healthcare Improvement
URL <http://www.ihl.org/knowledge/Pages/Changes/MeettheNeedsofSpecificPopulations.aspx>
- RESOURCE How to Improve / Model for Improvement
SOURCE Associates in Process Improvement. Available from the Institute for Healthcare Improvement
URL <http://www.ihl.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove>
- RESOURCE Measures
SOURCE Institute for Healthcare Improvement
URL <http://www.ihl.org/knowledge/Pages/Measures/default.aspx>
- RESOURCE HEDIS & Quality Measurement
SOURCE National Committee for Quality Assurance
URL <http://www.ncqa.org/tabid/59/Default.aspx>

<p>Last reviewed: May 2011 Next scheduled review: May 2012 For the latest version, go to http://www.ncchc.org/resources/clinicalguides.html</p>
