North Carolina Department Of Correction
Division Of Prisons

SECTION: Chronic Disease Guidelines

POLICY # CD-3

SUBJECT: Diabetes

EFFECTIVE DATE: June 2007
SUPERCEDES DATE: April 2003

References

Related ACA Standard — **4th Edition Standards for Adult Correctional Institutions 4-4359**

PURPOSE

To assure that DOP inmates with Diabetes are receiving high quality Primary Care for their condition.

POLICY

All DOP Primary Care Providers and Chronic Disease Nurses are to follow these guidelines when treating inmates with this chronic disease. Deviations from these guidelines are permissible only on a case by case basis. When deviations are made they must be clearly documented in the medical record along with a clear explanation of the rationale for the deviation.

PROCEDURE

DIABETES

(Document care on Diabetes Flow Chart, DC-)

I. ***Initial evaluation:*** May be done by Chronic Disease Nurse (CDN) at the first housing assignment after processing. It should be completed within 20 working days of arrival at the first housing assignment. If stable should see MD/PA within 60 days of the initial evaluation by CDN, if new diagnoses or unstable must see MD/PA within 30 days.

- **A. Vital Signs:** Blood pressure and pulse standing and lying, height and weight without shoes, determine BMI.
- **B. History of Present Illness:** Any current symptoms or side effects, compliance with medication. Diabetic Review of Systems – Ask if they are having any chest pain, SOB, exercise intolerance, frequent thirst or urination, blurred vision, loss of sensation in feet or hands, foot sores or ulcers, or generalized fatigue.
- **C. Diabetic History:** When first diagnosed, previous medications and/or treatments, any previous problems with medications, any surgery or hospitalizations. Is there any personal history of diabetic complications (i.e. neuropathy, retinopathy, nephropathy, vascular disease, amputations) Immunization status – Flu and Pneumovax.
- **D. Medications:** Ask about all prescription and over the counter medications (ask specifically about aspirin, Goody's Powders, NSAIDS) and herbal remedies they have been taking in the past 6 months.
- **E. Social History:** Smoking, alcohol use, illicit drug use, exercise (how much and how often).
- **F. Family History:** Ask if there is any history of premature Coronary artery disease (heart attack in men <55 and in women < 60 years of age), stroke, diabetes, or hyperlipidemia.
- **G. Physical Exam:** Comprehensive cardiovascular, pulmonary, skin, foot exams plus any other areas of concern identified from history. Test for decreased sensation in feet with monofilament tester.
- **H. Labs:**
  1. **HbA_1C:** This should be checked every 6 months on stable patients who are meeting their goals and every 3 months on unstable patients, ones not meeting their goals, or ones who have had a change in their DM regimen in the past 3 months.
  2. **Complete Metabolic Panel(CMP), and Lipid panels:** Order if not done in the past 6 months, then every 6 – 12 months.
  3. **Renal monitoring:**

a. Proteinuria: All diabetics should be checked for proteinuria every 12 months. Patients not known to have proteinuria should have a urine microalbumin exam.
1) If positive, then total protein excretion estimation (albumin/creatinine ratio) should be done.
2) Patients with known proteinuria should have an albumin/creatinine ratio done on a random sample annually to monitor their progress.
3) All patients with proteinuria should be considered for **ACE Inhibitor therapy (or ARB if ACE not tolerated/contraindicated).**

b. GFR: Should be estimated annually using MDRD or Cockcroft-Gault formulas.

Cockcroft-Gault formula: $CrCl(ml/min) = \frac{(140 - age) \times lean\ body\ wt}{Creat(mg/dl) \times 72}$

(For women, the formula requires multiplication by 0.85)

c. If < 90:
1) Consider initiating protein restriction of $\leq$ 0.8 gm/kg/day
2) Start ACE if not already taking
3) Aggressive control of BP ($\leq$ 130/80) using ACE, and/or ARB, diuretics and if needed beta-blockers, non-dihydropyridine calcium channel blockers (non-DCCBs)

4. EKG – Obtain a baseline EKG if one is not available
5. EKG should be reviewed by MD/PE during their next regular clinic.

I. Educate: Usually it is best to discuss only one or two issues at a single visit. Diabetics who have not had proper training in the past should have separate visit(s) to cover the following areas (list in order of importance).
1. Smoking cessation
2. Dietary instruction
3. SMBG: (Self monitored blood glucose) Stable patients should be doing it at least 4 times a week (once each: fasting and 2 hr PC all meals). Patients having hypoglycemic symptoms or who are not meeting their goals should check more often.
3. Exercise:
a. Goal: 30 – 45 minutes of aerobic exercise 5 – 7 times a week.
b. If not doing regularly, start with 10 – 15 minutes and increase by 1 minute everyday or every other day
c. Speed: As fast as they can walk without chest pain or severe SOB, but not so fast that they cannot carry on a conversation.
4. Foot Care: All diabetics who fail the monofilament test should receive detailed instructions on foot care: proper fitting shoes, no bare feet, daily inspection of soles, apply lotion or Bag Balm if prescribed at least once daily or more often if skin still dry and cracking. Request sickcall promptly for any non-healing sores, do not soak in hot water unless temperature of water has been checked using thermometer or by someone else.
5. Hypoglycemia management
6. Individualized instructions per primary provider orders

J. Assessment:
1. Glucose control: Based on the American Diabetics Association (ADA) guidelines:

Biochemical index	Normal	Goal	Action suggested
Average preprandial glucose	**<110**	**80 - 120**	**<80 or >140**
Average 2 hour postprandial glucose	**<140**	**<180**	**>180**
Average bedtime glucose	**<120**	**100 - 140**	**<100 or >160**
HbA_{1c} (%)*	**<6**	**<7**	**>7- 8**

*** these values need to be adjusted to the norms for the laboratory where the A_{1C} is being measured**

A. These goals should be adjusted based on the individual patient's age, life expectancy, comorbid conditions, number of medications, risk of hypoglycemia, ability and/or willingness to comply with the treatment plan, etc.

B. If a clinician decides, based on his/her clinical judgement, to modify the above goals for an individual patient, the basis for that decision and the modified goals need to be clearly explained in the medical records.

C. Control is defined as:

1) **Good if $A_1C < 7.0$ (with normal level of 6.0)**
2) **Fair if $A_1C > 7.0$ & < 9.0 (with normal level of 6.0)**
3) **Poor if $A_1C > 9.0$ (with normal level of 6.0)**

2. Blood Pressure control:

A. Recent studies have indicated that good blood pressure control in diabetics may be more important then good glucose control.

B. ADA goal for blood pressure is **≤ 130/80**

3. Lipid control: ADA goals:

A. LDL < 100
B. Trig < 150
C. HDL > 40 male (female > 50)

4. Note the presence of any diabetic complications.

5. Assess willingness to comply with treatment.

K. Treatment/plan:

1. Convert medications to formulary: If patient enters the system on non-formulary medications convert them to those available on formulary. Consult Central Pharmacy if you need assistance in making the conversion. Non-formulary requests will generally not be approved unless patient has been tried on the formulary agent first, even if current control is good.

2. Glucose control: If goals are not met adjust medical regimen:

a.) In Type II, generally oral medications should be pushed to maximal levels before starting insulin.

b.) Metformin (Glucophage) is usually the best initial therapy if the patient is obese and has ***normal renal function***. It is also a good choice in most normal weight diabetics, since it does not usually cause weight gain.

c.) Sulfonylureas (glipizide & glyburide) are good second line drugs (or alternative first line in normal weight patients) which should be added to metformin therapy if adequate control is not obtained. For combination therapy consider a fixed dose combination of glyburide and metformin.

d.) Thiazolidinediones (Pioglitazone/Rosiglitazone): If adequate control is not obtained with adequate doses of sulfonylureas + metformin, then a third oral agent may be added. **Avoid or use with caution in patients with LV dysfunction or CHF.**

e.) Insulin therapy: If adequate control cannot be obtained with oral medications, then Insulin therapy should be considered. Try using it in combination with oral agents can minimize doses of insulin.

3. Blood pressure control: If control inadequate consider increasing therapy:

a) ACE Inhibitors are generally considered first line drugs for control of BP in diabetics.

b) Diuretics are usually the most appropriate second line agent for control of BP in diabetics.

c) Beta-blockers: If the above do not adequately control the BP then add a beta-blocker unless contraindicated.

d) Non-DCCBs: If not controlled or cannot tolerate beta blockers, consider adding or substituting non-DCCB to regimen.

e) If control is still inadequate after four drugs, consider referral and/or evaluation for correctable causes.

4. Hyperlipidemia control:

   a) **Nutritional therapy:** Order **dietary consult** and counsel on **exercise** (30 minutes of aerobic exercise 5 days per week).
   b) **Drug therapy:**
      1) **Statins** are usually the best agents for elevated total cholesterol and LDL. **(goal LDL <100)**
      2) **Gemfibrozil** is a good alternative for patients with elevated triglycerides and low HDL
5. **Proteinuria control:** Refer to "Renal Monitoring" above
6. **Retinal exam: All** diabetics should have an initial exam at diagnosis and yearly exams after diagnosis.
7. **Immunize**
   a) **Pneumovax:** Administer if never received in the past.
   b) **Flu:** Administer if appropriate time of year. If not, put on reminder list for vaccine.

L. PULHEAT: PULHEAT IS TO BE REEVALUATED AT EVERY FOLLOW UP VISIT. Review their current rating and update as indicated. See PULHEAT guidelines for diabetes for guidance. If being seen by Chronic Disease Nurse and he/she feels that there is a need for change in PULHEAT, he/she should review with unit provider.

II. ***Follow up evaluations:***

A. Frequency: Stable diabetics who are currently meeting their treatment goals should be scheduled at least every 6 months to see the Chronic Disease Nurse (CDN) and every 12 months to see MD/PA. Diabetics who are stable and have fair control should be seen by CDN every 3 to 6 months and MD/PA every 6 to 12 months. Diabetics who have had major changes in their regimen and/or are poorly controlled should be scheduled at least every 3 months to see the Chronic Disease Nurse and every 6 months to see provider.

B. Refer to the Flow Chart Guidelines to complete flow chart and evaluation.

C. Assessment: Refer to guidelines above.

D. Treatment/plan: Refer to the above guidelines.

E. Education: Evaluate patient's level of current understanding and reeducate in weak areas.

F. Vaccines: Give any that are due.

G. Labs/studies: Refer to the above guidelines

H. Referral: If being seen by Chronic Disease Nurse, refer to or discuss with unit provider any patient who is having new or worsening symptoms, inadequate levels of control, or significant side effects.

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6/22/07

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