

## Prevention in Diabetes August 2008

**Clinical scenario #1:** A 43 YO Caucasian female presents to your office for the first time to establish care. She has seen no physicians in the past 18 months. She has no complaints today. Her PMH is significant for Type 2 DM, HTN, and angioedema requiring intubation thought to be the result of Lisinopril. She smokes ½ pack of cigarettes daily and gets no regular exercise. Her medications include Glucotrol XL 10 mg QD and Toprol XL 50 mg QD. Her exam reveals an obese female with a pulse of 88 and BP of 152/94. The rest of her exam is unremarkable.

1. What initial labs would you obtain on this patient?
2. How often would you obtain each of the above labs?
3. If her urine albumin-to-creatinine ratio is >100 mg/L two out of three times, what further interventions would be prudent in this patient to help prevent progression of her renal disease?
  - a. smoking cessation
  - b. tight glycemic control
  - c. angiotensin II receptor blocker
  - d. maintenance of goal BP  $\leq$  140/90 addition of a nondihydropyridine calcium channel blocker
  - e. weight loss
4. Besides oral hypoglycemic agents and antihypertensives, what other drug therapy could decrease this patient's risk for cardiovascular events?

**Clinical scenario #2:** A 55 YO AA male presents to the office for routine followup. He has Type 2 DM, HTN, hyperlipidemia. He smokes 1 pack of cigarettes per week, works in his garden about three times a week and drinks socially. He takes ASA, Zocor, Altace, Metformin and Avandia. On exam he is 5'11", 243 lbs., pulse is 78 and BP is 126/72. He is obese, lungs are clear, heart exam is unremarkable and abdomen is nontender without organomegaly, masses or bruits. His labs from last week show triglycerides 58, HDL 55, LDL 68, creatinine 0.9, HbA1c 6.1%, urine albumin-to-creatinine ratio of 17.

1. How often should this patient get his feet examined? How should they be examined and by whom?
2. What vaccines would you offer this patient and how often should they be given?
3. When and how often should diabetic patients receive an eye exam? Who should perform the exam?

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1. What initial labs would you obtain on this patient?

**HbA1c, BMP, LFTs, urine albumin-to-creatinine ratio (avoids inaccuracy due to fluctuations in urine volume when measuring albumin only), FLP**

2. How often would you obtain each of the above labs?

**HbA1c – every 3 months if not at goal, every 6 months if at goal**

**BMP – at least annually. Use Scr to estimate GFR and stage CKD.**

**LFTs – The US Food and Drug Administration labeling information includes liver function testing before and at 6 weeks following the initiation of statins, and at any elevation of dose and periodically thereafter**

**urine albumin-to-creatinine ratio – at least annually. Two out of three samples collected within a 3 to 6 month period should be abnormal for diagnosis of micro- or macroalbuminuria**

**FLP - 3-12 months (depending on whether therapy is changing or following initiation and maintenance of lipid lowering therapy; American Diabetes Association suggests if optimal, Q2 years but also suggests yearly check to evaluate CHD risk)**

3. If her urine albumin-to-creatinine ratio is >100 mg/L two out of three times, what further interventions would be prudent in this patient to help prevent progression of her renal disease?

- a. smoking cessation **TRUE**
- b. tight glycemic control **TRUE**
- c. angiotensin II receptor blocker **POSSIBLY TRUE (angioedema much less common with ARBs but cases have occurred. In a study, 2 of 26 patients with ACE-inhibitor induced angioedema also had angioedema while taking an ARB, which disappeared after withdrawal from the ARB. These observations suggest that, in a risk-benefit assessment, ARBs should be used cautiously in patients with a history of ACE inhibitor-induced angioedema)**
- d. maintenance of goal BP  $\leq$  140/90 **FALSE (optimal BP uncertain but appears to be at least < 130/80)**
- e. addition of a nondihydropyridine calcium channel blocker **TRUE (verapamil and diltiazem have both been shown to decrease overt**

**proteinuria - values above 300 mg/day - when use alone; in one trial, the combination of lisinopril and verapamil improved proteinuria more than either drug alone)**

- f. **weight loss TRUE (may improve glycemic control, decrease blood pressure and decrease proteinuria)**

4. Besides oral hypoglycemic agents and antihypertensives, what other drug therapy could decrease this patient's risk for cardiovascular events?

**Daily aspirin therapy and an HMG CoA reductase inhibitor (statin) if no allergies or other contraindications. According to the American Diabetes Association's *Standards of Medical Care in Diabetes 2008*, all individuals over 40 without overt cardiovascular disease and at least 1 risk factor (men  $\geq 45$ , women  $\geq 55$ , family hx premature CHD, cigarette smoking, HTN, HDL < 40) should begin statin therapy irrespective of baseline LDL.**

Clinical scenario #2: A 55 YO AA male presents to the office for routine followup. He has Type 2 DM, HTN, hyperlipidemia. He smokes 1 pack of cigarettes per week, works in his garden about three times a week and drinks socially. He takes ASA, Zocor, Altace, Metformin and Avandia. On exam he is 5'11", 243 lbs., pulse is 78 and BP is 126/72. He is obese, lungs are clear, heart exam is unremarkable and abdomen is nontender without organomegaly, masses or bruits. His labs from last week show triglycerides 58, HDL 55, LDL 68, creatinine 0.9, HbA1c 6.1%, urine albumin-to-creatinine ratio of 17.

1. How often should this patient get his feet examined? How should they be examined and by whom?

**He should receive an annual foot examination to identify high-risk foot conditions (peripheral neuropathy, altered biomechanics or bony deformities, evidence of peripheral vascular disease, history of ulcers or amputation, severe nail pathology). This examination should include assessment of protective sensation (using monofilament is wise because of its reproducibility), foot structure and biomechanics (observe walking a few steps), vascular status (look for diminished pulse, skin atrophy or hair loss), and skin integrity. People with one or more high-risk foot conditions should be evaluated more frequently for the development of additional risk factors. People with neuropathy should have a visual inspection of their feet at every visit with a health care professional. Routine podiatric consult is not necessary.**

2. What vaccines would you offer this patient and how often should they be given?

**Influenza vaccine is recommended for all adult diabetics every year. Pneumococcal vaccine is recommended for all adult diabetics at least once. There is insufficient evidence to recommend routine revaccination for diabetics with no other health problems. However, a one-time revaccination is recommended for individuals  $\geq 65$  years of age previously immunized when they were <65 years of age if the vaccine was administered more than 5 years ago. Other indications for repeat vaccination potentially relevant to patients with diabetes include nephrotic syndrome, chronic**

**renal disease, and other immunocompromised states, such as post-organ transplantation.**

3. When and how often should diabetic patients receive an eye exam. Who should perform the exam?

**Patients with type 1 diabetes should have an initial dilated and comprehensive eye examination by an ophthalmologist or optometrist within 5 years of the onset of diabetes. Patients with type 2 diabetes should have an initial dilated and comprehensive eye examination by an ophthalmologist or optometrist shortly after diabetes diagnosis. Subsequent examinations for both type 1 and type 2 diabetic patients should be repeated annually by an ophthalmologist or optometrist, unless eye exam is normal, then can wait 2-3 years.**

## **References**

American Diabetes Association: Standards of Medical Care in Diabetes-2008. *Diabetes Care* 2008;31(1):S12-S54

Bakris GL; Barnhill BW; Sadler R. Treatment of arterial hypertension in diabetic humans: importance of therapeutic selection. *Kidney Int* 1992 Apr;41(4):912-9.

Bennett PH; Haffner S; Kasiske BL; Keane WF; Mogensen CE; Parving HH; Steffes MW; Striker GE. Screening and management of microalbuminuria in patients with diabetes mellitus: recommendations to the Scientific Advisory Board of the National Kidney Foundation from an ad hoc committee of the Council on Diabetes Mellitus of the National Kidney Foundation. *Am J Kidney Dis* 1995 Jan;25(1):107-12.

Morales E; Valero MA; Leon M; Hernandez E; Praga M. Beneficial effects of weight loss in overweight patients with chronic proteinuric nephropathies. *Am J Kidney Dis* 2003 Feb;41(2):319-27.

Up To Date. Online version 16.2.

Malde B; Regalado J; Greenberger PA. Investigation of angioedema associated with the use of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers. *Ann Allergy Asthma Immunol.* 2007 Jan;98(1):57-63.