Renal Disease In Diabetes

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Washington State Clinical Advisory Council to the Washington State Department of Health
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The individual clinician is in the best position to determine which tests are most appropriate for a particular patient.

Screening and Monitoring	Treatment and Monitoring	Risk of ESRD
Urinalysis for protein[1] **Less than 1+ protein:** Test for **microalbuminuria**[2] with either: 1. Spot AM urine for mg microalbumin/mg creatinine (ratio)[1]**;** or 2. Timed urine collection for mcg albumin/min; or 3. 24 hour urine collection for total mg albumin/24 hours. **NOTE:** See the following two boxes for interpretation of results for these tests.	**Protective Recommendations for all patients** 1. Strict glucose control (HbA1C less than or equal to 7.0% using an NGSP[3]-certified method); 2. Strict blood pressure control (less than or equal to 130/80); 3. Strict lipid control (cholesterol less than 200 mg/dL, LDL less than 100 mg/dL, HDL greater than 45 mg/dL, triglycerides less than 150 mg/dL).	
1. Spot AM urine microalbumin/creatinine ratio less than 0.03 mg/mg on 2 of 3 tests (to rule out false positives[1]); or 2. Urine albumin less than 20 mcg/min on timed urine collection; or 3. Total urine albumin less than 30 mg on 24-hour urine collection.	**No microalbuminuria** 1. Repeat test for microalbuminuria[2] **annually;** 2. Continue **Protective Recommendations** as above; 3. If patient already on ACE inhibitor or ARBs[4], check serum creatinine and K+ (see #4 below).	**Low**
1. Spot AM urine microalbumin/creatinine ratio 0.03 to 0.30 mg/mg on 2 of 3 tests (to rule out false positives[1]); or 2. Urine albumin 20 to 200 mcg/min on timed urine collection; or 3. Total urine albumin 30 to 300 mg on 24 hour urine collection.	**Microalbuminuria (incipient nephropathy)** 1. If serum creatinine less than 2 mg/dL and K+ less than 5.5 mEq/L, treat with ACE inhibitor or ARBs[2]; 2. Continue **Protective Recommendations** as above; 3. Check serum creatinine and K+ and UA for gross proteinuria annually; 4. If creatinine greater than 2 mg/dL or K+ greater than 5.5 mEq/L; **consider consult with nephrologist.**	**Mod: incipient nephro-pathy**
Greater than or equal to 1+ protein, or **Spot AM urine albumin/creatinine ratio greater than 0.30 mg/mg on 2 of 3 tests (to rule out false positives[1]).** Check total gm urine protein on 24-hour urine collection, or spot AM urine protein/creatinine ratio. 1. Total urine protein greater than 500 mg but less than 1 gram on 24-hour urine collection; or 2. Spot AM urine protein/creatinine ratio greater 0.5 but less than 1.0.	**Macroalbuminuria/gross proteinuria (overt nephropathy)** 1. Continue treatment as for microabuminuria above; 2. Consider consult with nephrologist.	**High: overt nephro-pathy**
1. Total urine protein greater than 1 gram in 24 hours; or 2. Spot AM urine protein/creatinine ratio greater than 1.0.	**Marked proteinuria (severe renal disease)** Refer to nephrologist for education and preparation for dialysis	**Extremely high: pending ESRD**

[1] UA protein or spot AM urine microalbumin/creatinine ratio may be positive or elevated in the setting of poor glucose control, UTI, heavy exercise, fever or sepsis – treat as appropriate before re-testing.

[2] Most labs use a very sensitive method to measure albumin in the microalbumin range. Check with your lab on test choice and availability, specimen collection, preference, and interpretation.

[3] NGSP: National Glycohemoglobin Standardization Program

[4] ARBs: Angiotensin Receptor Blockers