Urine Albumin Tests

1. Urine Albumin: Creatinine Ratio (UACR)
   - UACR measures Albumin excretion in: mg albumin/g creatinine.
   - Run on a spot urine sample; timed samples not necessary. This test accounts for variation in urine concentration.
   - Good at assessing any level of proteinuria
   - Values can be used for screening, diagnosing, and monitoring interventions, for guiding therapy.
   - Requires lab analysis; there is currently no POC test.

   The “gold standard” for urine albumin testing = UACR

Other urine protein tests

These tests are not recommended for assessing albuminuria

2. Urine Protein: Creatinine Ratio (UPCR)
   - Not sensitive for early detection; not standardized

3. 24 hour urine collection for protein
   - Labor intensive for patients and is difficult to get a complete and accurate sample; no more effective than simpler tests such as UACR for DM nephropathy

4. Test strips (e.g. Micral, Clinitek)
   - Test strip results may look like UACR results (mg albumin/g creatinine) but less accurate
   - Local lab test names vary widely; Talk with your lab on how to order a UACR (and not a test strip).
   - CLIA-waived POC test; but trade accuracy for convenience

5. UA dipstick
   - Only detects higher levels of proteinuria (>300mg/g)
   - Not precise and cannot be used to assess or monitor albuminuria in Type 2 Diabetes

   The Diabetes Care and Outcomes Audit will count any type of urine protein screening, but UACR is preferred

Albuminuria is a continuous variable, the terms “microalbuminuria” and “macroalbuminuria” are going out of use.

Since these terms are still used for ICD9 Coding:
- Normal = < 30mg/g
- Microalbuminuria = 30 - 300mg/g
- Macroalbuminuria = > 300mg/g

Urine Albumin Screening and Monitoring in Type 2 DM

Albuminuria describes a condition in which urine contains an abnormal (high) amount of albumin. In people with Type 2 Diabetes (DM), albumin is the primary protein excreted by the kidneys. Albuminuria is usually a marker of nephropathy and CVD. High levels and/or a rapid rise in urine albumin may be a sign of serious kidney disease. Not all kidney disease in people with diabetes is diabetic nephropathy; consider other causes of kidney damage.

The “gold standard” for kidney testing in people with diabetes = UACR and eGFR

Assessing Urine Albumin in Type 2 DM

1. Screen: Check UACR at diagnosis and yearly
2. Diagnosis: Positive diagnosis albuminuria if UACR is greater than 30mg/g on 2 separate occasions
3. Monitor: Recheck UACR every year

More frequent monitoring may be needed in patients with changing clinical status or after therapeutic interventions.

(Do not monitor urine albumin in dialysis patients)

When you should NOT screen for proteinuria:

Do not screen if symptoms of UTI or a UA that is positive for leukocytes, nitrite, or RBC. Address these issues first, then screen for urine protein once resolved.

Causes of false positives include: strenuous exercise within 24 hours, infection, fever, CHF, marked hyperglycemia, pregnancy, marked hypertension, UTI, and hematuria.

Management of Albuminuria

The following strategies should be implemented to reduce albuminuria, prevent/slow nephropathy progression, and lower the risk of CVD:

- Maximize ACE Inhibitor/ARB
- Stop smoking
- Protein restriction (later stages)
- Glucose Control

Repeat UACR to monitor effectiveness of intervention; a decrease in urine albumin is therapeutically significant.

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