

## 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
- BP Control
- Stop smoking
- Lipid Control
- Protein restriction (later stages)
- Glucose Control

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

## 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