About this series

The aim of the "How to" series is to provide readers with a guide to clinical procedures and aspects of diabetes care that are covered in the clinic setting.

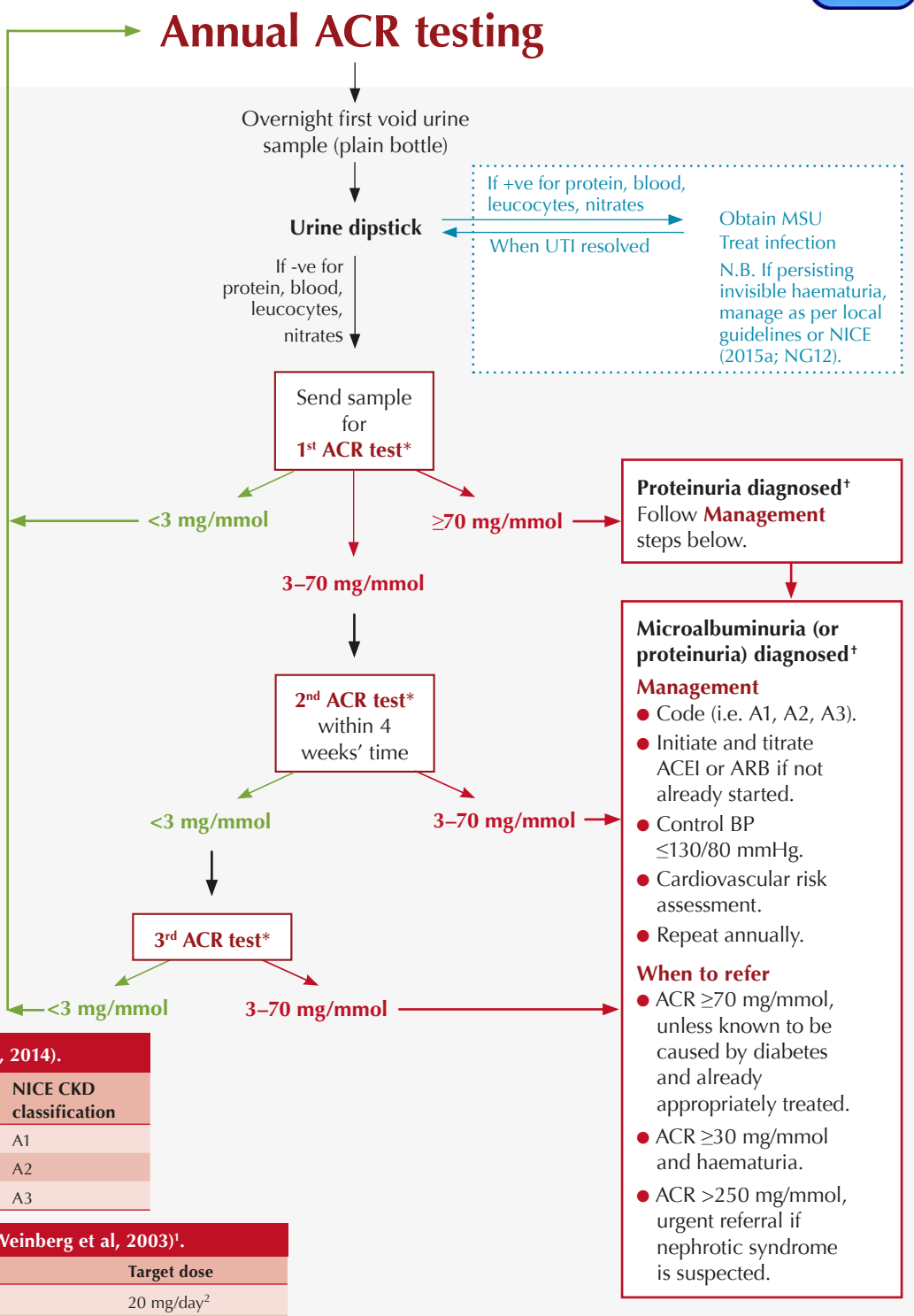
What and why

- Microalbuminuria is a sign of early renal damage in people with diabetes, which if unchecked can progress to end-stage renal failure. It is measured by the amount of protein in the urine *(Table 1)*.
- Treatment with an ACEI or an ARB agent (but not both) can slow the progress to kidney damage and cardiovascular events *(Table 2)*.

Notes

*Ensure all ACR results are received and processed by nominated members of staff who are aware of how to code and action ACR results.

†If microalbuminuria or proteinuria has been diagnosed and the next year's first test is positive, it does not need to be repeated to confirm the continuing diagnosis.



1. Classification of proteinuria (NICE, 2014).

ACR	Microalbuminuria diagnosis	NICE CKD classification
<3 mg/mmol	Normal	A1
3–30 mg/mmol	Microalbuminuria	A2
>30 mg/mmol	Proteinuria	A3

2. Target dose for renal protection (Weinberg et al, 2003)[1].

Drug	Initial dose	Target dose
Lisinopril	2.5 mg/day	20 mg/day[2]
Ramipril	1.25 mg/day	5 mg/day
Candesartan[3]	4 mg/day	16 mg/day
Irbesartan[4]	150 mg/day	300 mg/day
Losartan[5]	25–50 mg/day	100 mg/day

[1]Some studies of albuminuria/proteinuria reduction used both an ACEI and an ARB agent but this is no longer recommended.
[2]Some studies demonstrated increased benefit at higher than licensed doses of lisinopril. A dose over 20 mg must be managed in a specialist setting.
[3]Candesartan is not licensed for the treatment of albuminuria/proteinuria.
[4]Irbesartan is licensed for renal disease in hypertensive type 2 diabetes.
[5]Losartan is licensed for renal disease in people with hypertension and type 2 diabetes with proteinuria ≥0.5 g/day as part of hypertension treatment.

For up-to-date information on all drugs listed, including for special populations, see the relevant Summary of Product Characteristics (www.medicines.org.uk).

Useful abbreviations

ACEI: angiotensin-converting enzyme inhibitor
ACR: albumin: creatinine ratio
ARB: angiotensin receptor blockers
BP: blood pressure
MSU: mid-stream specimen of urine
UTI: urinary tract infection

References and further information

NICE (2014) *CKD in adults: assessment and management* (CG182). NICE, London
NICE (2015a) *Suspected cancer: recognition and referral* (NG12). NICE, London
NICE (2015b) *Type 2 diabetes in adults: management* (NG28). NICE, London
Weinberg MS et al (2003) *Current Hypertension Reports* **5**: 418–25

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