Proteinuria

CARI guidelines

Caring for Australians with Renal Impairment (CARI) Steering Committee members

The CARI guidelines initiative is an Australian evidence based project that aims to provide high quality, evidence based clinical practice guidelines for the management of all stages of kidney disease. This article is a summary of the CARI guidelines on proteinuria with expert commentary by Mark Harris, *Guidelines for preventive activities in general practice* ('red book') Taskforce member.

Data sources

Medline, Cochrane Clinical Trials database.

Guideline authors

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Study selection and assessment

No high level evidence (ie. systematic reviews of randomised controlled trials or standard randomised controlled trial studies) were available. Recommendations were developed using evidence from observational studies such as cohort, case control and case series studies.

Suggestions for clinical care

Patients with hypertension or known vascular disease, or a family history of renal disease are at high risk of developing proteinuria.

Performance characteristics of tests used in the initial evaluation of patients at risk of renal disease

Dipstick testing

Dipstick protein has been identified to have poor sensitivity and specificity (sensitivity 60–80%) and specificity (67–85%). Dipstick microalbumin is more reliable but operator (and technique) dependent.

Initial testing for albuminuria

For initial testing for albuminuria, morning urine albumin creatinine ratio (ACR) is preferred, however a random urine ACR is acceptable. If abnormal, one or more timed urines are required to confirm microalbuminuria.

Protein creatinine ratio

Protein creatinine ratio (PCR) is an accurate test for diagnosis of significant proteinuria and is more convenient than a 24 hour urine collection. Timed urine collections are recommended when knowledge of absolute level of proteinuria is required.

Testing for proteinuria in high risk patients

The urine protein creatinine ratio is the preferred test for screening populations at risk of kidney disease (hypertension, known vascular disease and family history of kidney disease).

Testing for early nephropathy in Aboriginal or Torres Strait Islander and/or diabetic patients

Initial testing for albuminuria (urine albumin creatinine ratio) is preferred to proteinuria as it allows detection of early nephropathy. In patients with established nephropathy there is no evidence that either test is superior.

Other points

- Timed urine collections are recommended when knowledge of absolute level of protein in the urine is required
- Single voided urine samples can be just as reliable as 24 hour urine collection (gold standard) to detect and monitor proteinuria/albuminuria in children
- In children other than diabetics, total urine protein should be measured in preference to urine albumin when screening normal children, and for monitoring children with chronic kidney disease
- Children with pre-pubertal onset diabetes should have their urinary albumin level measured 5 years after onset, or at age 11 years, or at puberty (whichever is earlier), then annually thereafter
- Children with pubertal onset diabetes should have their urinary albumin level measured 2 years after onset, then annually thereafter.

Expert commentary

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This guideline is largely based on level III evidence which includes evidence from cohort studies, case control studies, or population studies such as the AusDiab study in Australia. This is necessary when evidence from randomised controlled trials is not available or not appropriate, and can provide a useful guide, especially for screening tests which are low cost and have no or few adverse effects. Testing for urinary protein falls into this category.

The recommendations can be compared with the recommendations in the soon to be released 6th edition of the RACGP

Guidelines for preventive activities in general practice ('red book') which recommends that patients 50 years of age and over should have their blood pressure and a dipstick test for protein performed every year, and that some high risk groups such as those with diabetes should be tested using microalbuminuria. The NHMRC guidelines for type 2 diabetes recommend testing for albuminuria using a timed collection or albumin creatine ratio.

It is unclear at what age the authors are recommending that testing should occur. Certainly there is little evidence that testing in low risk populations under 50 years of age is of benefit. However, it is appropriate in Aboriginal and Torres Strait Islander patients aged over 35 years, and in those with diabetes or renal disease at a younger age.

The method of testing is also recommended in the guideline. Dipstick testing for protein is appropriate in the general population. Testing for urinary microalbumin is a more sensitive predictor of progressive renal disease, especially in patients with diabetes. The albumin creatinine ratio is a useful initial test that can be performed on a spot urine test. The ratio adjusts for the effects of variability in excretion due to variation in hydration. The protein creatine ratio adjusts a spot test for proteinuria in the same way. However this has not been used in Australian population studies.

The other useful test that should be considered for higher risk groups such as Aboriginal or Torres Strait Islander patients, those with hypertension, diabetes or a family history of renal disease, is the glomerular filtration rate which can be calculated from the patients age, gender and serum creatinine.

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CARI guidelines are available at www.cari.org.au/ckd_urineprot_list_pub2004.php