

International Clinical Laboratories

Test Review



Protein Creatinine Ratio Measurements On Random Urine Samples for Prediction of Significant Proteinuria

Proteinuria is recognized as an independent risk factor for cardiovascular and renal disease and as a predictor of end organ damage (1). It is acknowledged that estimation of urinary protein excretion over a 24-h period is the reference, or gold standard, method. This approach, however, is considered by many to be impractical in some circumstances, particularly in the outpatient setting, because of the difficulties associated with obtaining a complete collection. In a study of elderly patients, Mitchell et al. had to discard >20% of the samples returned because they were considered to be incomplete; Chitalia et al. in their study had to discard 10% of the samples received for similar reasons (2,3).

An alternative approach that has been proposed, and used in some clinical situations for many years, is that of expressing the protein excretion in a random urine collection as a ratio to the creatinine concentration. Several investigators studied the relationship between the **Protein Creatinine ratio** and 24-h protein excretion and concluded on the basis of different data that the protein: creatinine ratio of a spot urine could be used as a reliable indicator of the 24-h protein excretion (4). Most importantly, it is shown that the protein: creatinine ratio for a random urine

sample (particularly with adjustment of the test threshold to a lower value) might be used to rule out the presence of significant proteinuria as defined by a quantitative measure of the 24-h protein excretion. Used faster assessment of your patient kidney status. In this way, the random urine measurement might thus reduce the number of unnecessary 24-h urine collections and their associated unreliability. When results above the cutoff value for the protein: creatinine ratio are obtained, a full 24-h collection and quantification are indicated. Thus, ICL has started offering random/spot urine Protein: creatinine ratio in addition to 24hr urine test.

Reference:

1. Chitalia VC, Kothari J, Wells EJ, Livesey JH, Robson RA, Searle M, et al. Cost-benefit analysis and prediction of 24-hour proteinuria from the spot urine protein-creatinine ratio. *Clin Nephrol* 2001;55:436-447.
2. Mitchell SCM, Sheldon TA, Shaw AB. Quantification of proteinuria: a re-evaluation of the protein/creatinine ratio for elderly subjects. *Age Ageing* 1993; 22:443-449.
3. Ginsberg JM, voided urine samples to estimate quantitative proteinuria. *New Engl J Med* 1983;309: Chang BS, Matarese RA, Garella S. Use of single 1543-