Urea (serum)

Description	Final degradation product of protein and amino acid catabolism.
Indication	Evaluation of renal function.
Additional Info	Deamination of amino acids during the catabolism of proteins results in the formation of ammonia. Ammonia is synthesised to urea in the liver by a series of enzymes in the urea cycle pathway. Urea is excreted in the urine and is the major route for removing excess nitrogen. In the assessment of renal function, serum urea is most useful when compared to the serum creatinine concentration.
Concurrent Tests	Part of the U&E profile.
Dietary Requirements	N/A
Interpretation	<u>High Urea</u> High protein diet, gastrointestinal bleed, dehydration, reduced GFR. <u>Low Urea</u> Low protein diet, starvation, severe liver disease, urea cycle defects. <u>Assessment of renal function</u> Urea is freely filtered at the glomerulus and the serum urea concentration may be used as an index of the glomerular filtration rate (GFR). However, a number of non-renal factors also affect the serum urea concentration e.g. a high protein diet. There is also significant reabsorption of urea from the lumen of the nephron by passive diffusion. Serum creatinine is therefore considered a better test of GFR. The amount of urea reabsorbed in the nephron increases at high serum urea concentrations e.g. in renal failure, or if the flow rate through the nephron is reduced e.g. dehydration. Comparison of the degree of elevation between the serum urea and the serum creatinine concentration is useful in differentiating between pre-renal and intrinsic renal failure. In pre-renal failure the serum urea is disproportionately higher than the serum creatinine, whereas in intrinsic renal failure they rise in parallel.
Collection Conditions	N/A
Frequency of testing	As required