

Phosphate (24 hour urine)	
Description	Phosphate is an intracellular mineral that is mostly found in bone, phospholipid membranes, and nucleic acids. It plays a role in the formation of high energy compounds (ATP, creatinine phosphate), and in second messengers (cAMP, inositol phosphates). Phosphate is also involved in activation and inactivation of enzymes.
Indication	Renal function.
Additional Info	<p>Phosphate is vital for energy metabolism, muscle contraction, nerve signalling, intracellular signalling and electrolyte transport. Phosphate is an important buffer, particularly in the urine and contributes to the maintenance of acid-base status. The kidneys filter about 160mmol of phosphate per 24 hours, and excrete roughly 25mmol.</p> <p>Reduced eGFR, acute kidney injury, and chronic renal failure can all contribute to a low urine phosphate. Increased renal tubular absorption (lactation, low PTH, thyrotoxicosis) can also result in low urine phosphate.</p> <p>High urine phosphate can be the result of several factors: primary or secondary hyperparathyroidism, osmotic diuresis, Fanconi syndrome.</p>
Concurrent Tests	N/A
Dietary Requirements	N/A
Interpretation	Urine phosphate is measured together with serum phosphate, and urine and serum creatinine, to enable calculation of the renal tubular reabsorption of phosphate (TmP/GFR), which can be used to investigate the cause of hypophosphataemia. A low TmP/GFR is found in several disorders of renal phosphate handling that result in hyperphosphaturia, hypophosphataemia and osteomalacia.
Collection Conditions	Urine samples should be fresh or acidified to reduce the formation of insoluble calcium phosphate complexes. A 24 h collection may be taken to reduce the effect of diurnal variation and diet on phosphate excretion (although is subject to inaccuracy arising from problems with collection). If the sample is to be used for calculation of renal tubular reabsorption of phosphate (TmP/GFR), it should be a fasting second voided urine collected into a plain bottle, together with a serum sample, to allow simultaneous measurement of serum phosphate, and urine and serum creatinine.

Frequency of testing	As needed
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