TmP/GFR Factsheet

The TmP/GFR is the ratio of the renal tubular maximum reabsorption rate of phosphate (TmP) to glomerular filtration rate (GFR).[1,2]

You will need the following values to calculate the TmP/GFR.
Please note that these should be fasting values.

Urine phosphate (mmol/L)	
Plasma phosphate (mmol/L)	
Plasma creatinine (mmol/L)	
Urine creatinine (mmol/L)	

Calculation

Step 1 (calculate the fractional tubular reabsorption of phosphate)

$$TRP = 1 - \left\{ \left(\frac{\textit{urine phosphate}}{\textit{plasma phosphate}} \right) \times \left(\frac{\textit{plasma creatinine}}{\textit{urine creatinine}} \right) \right\}$$

Step 2 (calculate the TmP/GFR (mmol/L) based on TRP value)

If TRP ≤0.86, *TmP/GFR = TRP x plasma phosphate*

Or

If TRP >0.86, *TmP/GFR* $= 0.3 \times \frac{TRP}{1 - (0.8 \times TRP)} \times$ ***plasma phosphate***

TmP/GFR (mmol/L) = _____

Interpretation

Low levels suggest renal phosphate wasting.
Age-related reference ranges for TmP/GFR are given below.[2]

Paediatric Ranges

Age	Range (mmol/L)
Birth	1.43-3.43
3 months	1.48-3.30
6 months	1.15-2.60
2-15 years	1.15-2.44

1. Manghat P, et al. *Ann Clin Biochem.* 2014;51(6):631-656. **2.** Payne RB. *Ann Clin Biochem.* 1998;35:201-206.

This factsheet is developed and funded by Kyowa Kirin International.
November 2019. KKI/INT/BUR/0314

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