Sodium phosphate Intravenous infusion for adults

Who can administer

SODIUM phosphate

- May be administered by registered competent doctor or nurse/midwife.

Important information

- There is a separate IV monograph for Potassium phosphate - ensure you have chosen the correct IV guide
- **Suggest: Senior doctor review before administration of intravenous phosphate, as it's use can be dangerous**
  - **Caution:** the response to any given dose cannot be predicted, and IV use can cause hypocalcaemia (tetany), calcium-phosphate precipitation in the kidneys, and fatal arrhythmias [ref 1]
- Patients withÂ **HYPOcalcaemia**Â should have their calcium corrected before replacing phosphateÂ [ref 5]Â
- Patients withÂ **severe HYPERcalcaemiaÂ** who require phosphate replacement: seek specialist advice
- **Renal impairment**:Â Requires dose adjustment- see below
- **Give in a dedicated line**Â as it may precipitate with other drugs

Available preparations

Phosphate salt	Volume	Phosphate content per vial/ampoule/bag	Sodium content per vial/ampoule/bag	Potassium content per vial/ampoule/bag
Natriumphosphat Braun (sodium phosphate)	20ml	12mmol	20mmol	nil
Phosphate polyfusor pre-mixed bag - very severe hypophosphataemia.Â **Supplied only on request.**	500ml	50mmol	81mmol	9.5mmol

Reconstitution

Already in solution

Ampoules should be diluted further prior to administration

Infusion fluids

Sodium chloride 0.9% (preferred)Â

Glucose 5% may also be used if clinically appropriate

Methods of intravenous administration

Intermittent intravenous infusion (using an electronically controlled infusion device)

- Administer as per guidelines below

Dose in adults

Table 1: Guidance on route given below but clinical judgement is always requiredÂ [ref 1]Â	
Route of administration	**Phosphate level**
Oral/enteral replacement	PREFERRED >0.32mmol/L and asymptomaticÂ **or** if level >0.48mmol/LÂ and symptomaticÂ
Intravenous route preferred	<0.32mmol/L **or** <0.48mmol and symptomatic **or** if unable to tolerate oral supplementation

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Table 2: Dosing strategies:Â SODIUM PHOSPHATEÂ - via peripheral lineÂ [ref 1,2,3]Â					
• It is **difficult to provide concrete guideline**s for the treatment of severe hypophosphataemia as regimens vary greatly across hospitals in the UK and Ireland - **we have tried to provide guidelines below but clinical judgment is always required** • Use caution when interpreting phosphate levels.Â Changes in phosphate levels may be transient - treating **underlying causes**Â may be sufficient to correct level.Â **Review medications** which may contribute e.g. sevelamar, antacids, diureticsÂ [ref 5] • **Caution:** the response to any given dose cannot be predicted, and IV use can cause hypocalcaemia (tetany), calcium-phosphate precipitation in the kidneys, and fatal arrhythmias [ref 1] • **Prescribe dose in terms of phosphate dose required and then the phosphate salt required** ◦ **e.g. '9mmol phosphate as sodium phosphate'** • **Rate of administration:**Â there are no concrete guidelines so we suggest any dose (up to a max of 50mmol) should be given over at least 6 hoursÂ [ref 2,3]Â				
Gentle replacementÂ	9mmol over 12 hours, and repeat as necessaryÂ [ref 2,3]Â				
More individualised dosing [ref 1]	**Phosphate level**	**Phosphate dose**	**Maximum initial phosphate dose**	**RateÂ** [ref 2,3]Â	**Example:** 70kg, normal renal function
	less than 0.32mmol/L	0.4mmol/kg	50mmol	Administer over 12 hours.Â May be given over 6 hours if deemed clinically appropriate	28mmol (47ml sodium phosphate)
	0.33 to 0.44mmol/L	0.3mmol/kg	30mmol		21mmol (35ml sodium phosphate)
	greater than 0.45mmol/L	0.2mmol/kg	20mmol		14mmol (23ml sodium phosphate)
Critically ill patients	Can give up to 0.5mmol/kg (to a max of 50mmol)Â				
Infusion volume	Up to 25mmol- add to 250ml infusion fluid Up to 50mmol - add to 500ml infusion fluidÂ				
Renal impairment	Use with great caution,Â consider specialist advice Generally avoid in severe renal impairment [ref 6] Suggest use half the phosphate doses specified above, with careful monitoring [ref 4]				
Critical care/Fluid restriction	Higher doses and rates may apply in the Critical Care setting				
Polyfusor	Generally supplied to critical care areas only				
Repeated doses	• May require repeat infusions over subsequent days • Usual maximum is 50mmol phosphate per 24 hoursÂ [ref 1]Â				
Switch to oral route	Consider switch to oral route once level >0.48mmol/L				

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Monitoring

- Monitor the following electrolytes every 6 to 12 hours: Phosphate, Calcium, Potassium, Sodium, MagnesiumÂ [ref 1]Â
- Monitor fluid balance and blood pressure

Storage

- Sodium phosphate is NOT treated as a controlled drug.
- Store below 25^{0}C

References

1. Uptodate. Hypophosphataemia: Evaluation and Treatment March 2024. Accessed online 23/01/2025
2. Martindale- accessed online 23/01/2025
3. BNF- accessed online 23/01/2025
4. UpToDate Sodium Phosphate monograph - accessed March 2025
5. Maidstone and Tunbridge Wells NHS Trust 'Treatment of acute hypophosphataemia in adults. Review date August 2027
6. Local specialist opinion - email on file 25/06/2025

These local guidelines were also consulted in the preparation of guide (to try and create a consensus from different sources)

- Grampian staff guideline for the management of hypophosphataemia in adults July 2024
- Worcestershire acute hospitals NHS Trust 'guideline for the treatment of hypophosphataemia in adults, March 2023
- Liverpool University Hospitals NHS TrustÂ
- UKMI Leeds hospital 'How is acute hypophosphataemia treated in adults
- Adults Therapeutic Handbook (NHS Greater Glasgow and Clyde), May 2023 Management of hypophosphataemia

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