

## Drug Shortage: Potassium phosphate & Sodium phosphate injection

This document provides mitigation strategies for handling ongoing drug shortages to participants in the Vizient® Pharmacy Program. Information is compiled from mitigation strategies of institutions that serve on the Vizient Clinical Pharmacy Council and is reviewed by a panel of pharmacists. For more information, contact [pharmacyquestions@vizientinc.com](mailto:pharmacyquestions@vizientinc.com)

### Situation

This mitigation strategy is to serve as a resource if potassium phosphate or sodium phosphate for injection experience supply disruptions due to shortages.

### Background

Previous shortages of potassium phosphate and sodium phosphate for injection have caused concern. This mitigation strategy is intended to provide guidance for present and future shortages.

#### Products affected

Potassium phosphate for injection	<ul style="list-style-type: none"> <li>3 mmol/mL, 5 mL single dose preservative-free vial</li> <li>3 mmol/mL, 15 mL single dose preservative-free vial</li> <li>3 mmol/mL, 50 mL single dose preservative-free vial</li> <li>3 mmol/mL, 15 mL single dose vial</li> </ul>
Sodium phosphate for injection	<ul style="list-style-type: none"> <li>3 mmol/mL, 5 mL single dose preservative-free vial</li> <li>3 mmol/mL, 15 mL single dose preservative-free vial</li> <li>3 mmol/mL, 15 mL single dose vial</li> </ul>

### Assessment

Potassium phosphate and sodium phosphate for injection represent an important means for electrolyte repletion of phosphorous. Hospitals and health systems are advised to have a mitigation strategy available, to conserve inventory, in the event of a shortage affecting these formulations.

### Recommendation

#### Must know information

- Utilize oral products as able to conserve IV potassium phosphate and IV sodium phosphate.
- Reserve IV products for parenteral nutrition of pediatrics and neonates.
- Reserve IV sodium phosphate for neonates and patients with serum potassium levels  $\geq 4$  mEq/dL.
- Refer to the clinical and operational recommendations below for specifics and additional considerations.

### Clinical

#### Adults

- For treatment of mild-to-moderate hypophosphatemia (serum phosphate levels 1 to 2.5 mg/dL), utilize oral phosphate replacement therapy. See [Appendix 1](#) for available products and electrolyte content of each.
  - Inclusive of patients on an enteral diet or nothing by mouth (NPO) except for medications.
  - Consider IV therapy for patients with excessive wasting of phosphate (e.g., diabetic ketoacidosis, hyperosmolar hyperglycemic state, or patients with intractable diarrhea).
  - Consider IV therapy for patients on strict NPO or unable to take medications by mouth and a nasogastric/orogastric tube cannot be placed.
- For treatment of symptomatic or severe hypophosphatemia (serum phosphate levels  $\leq 1$  mg/dL), utilize IV phosphate replacement therapy. See [Appendix 1](#) for available products and electrolyte content of each.
  - For patients with serum potassium levels  $\geq 4$  mEq/dL, utilize sodium phosphate for injection.
  - For patients with serum potassium levels  $< 4$  mEq/dL, utilize potassium phosphate for injection.

## Pediatrics & Neonates

- 1) For treatment of mild-to-moderate hypophosphatemia (serum phosphate levels 1 to 2.5 mg/dL), utilize oral phosphate replacement therapy. See [Appendix 1](#) for available products and electrolyte content of each.
  - Inclusive of patients on an enteral diet or nothing by mouth (NPO) except for medications.
  - Consider IV therapy for patients with refeeding syndrome.
  - Consider IV therapy for patients on strict NPO or unable to take medications by mouth and a nasogastric/orogastric tube cannot be placed.
- 2) For treatment of symptomatic or severe hypophosphatemia (serum phosphate levels  $\leq 1$  mg/dL), utilize IV phosphate replacement therapy. See [Appendix 1](#) for available products and electrolyte content of each.
  - For IV replacement in neonates and patients with renal insufficiency, sodium phosphate is the preferred IV replacement therapy as potassium phosphate contains higher levels of aluminum. For neonates, potassium phosphate should only be used when sodium phosphate is undesirable based on laboratory results.
  - For IV replacement in pediatrics, to conserve sodium phosphate for neonates, potassium phosphate is the preferred IV replacement therapy. Sodium phosphate should only be used in the setting of documented hyperkalemia or renal insufficiency.

## Operational

- 1) Total parenteral nutrition (TPN) considerations:
  - Adjust the daily dose of phosphate added to parenteral nutrition
  - Reserve IV phosphates to pediatric and neonatal patients requiring parenteral nutrition.
  - Utilize IV fat emulsions, which contain 15 mmol/L of phosphate as egg phospholipids, in select patients
- 2) Electronic health record changes:
  - Implement changes to direct providers to utilize enteral route when clinically appropriate.
  - Provide guidance at the point of order entry to utilize intravenous potassium phosphate or sodium phosphate based on serum potassium levels determined by institutional committees.
  - Restrict orders of intermittent IV potassium phosphate or IV sodium phosphate to require pharmacy approval to assess for clinical appropriateness and the use of potential alternatives.
- 3) If inventory becomes critically low, pull available stock to inpatient pharmacy for inventory control.

## Appendix 1. Available products for phosphorous replacement

Product	Route	Elemental Phosphorous <sup>a</sup>	Potassium <sup>b</sup>	Sodium <sup>c</sup>
K-Phos Neutral	Oral	8 mmol/tablet (250 mg)	1.1 mEq/tablet (45 mg)	13 mEq/tablet (298 mg)
Phospha 250 Neutral	Oral	8 mmol/tablet (250 mg)	1.1 mEq/tablet (45 mg)	13 mEq/tablet (298 mg)
Phosphorous	Oral	8 mmol/tablet (250 mg)	--	--
Phospho-Trin 250 Neutral	Oral	8 mmol/tablet (250 mg)	1.1 mEq/tablet (45 mg)	13 mEq/tablet (298 mg)
Phos-NaK	Oral	8 mmol/packet (250 mg)	7.1 mEq/packet (280 mg)	6.9 mEq/packet (160 mg)
Virt-Phos 250 Neutral	Oral	8 mmol/tablet (250 mg)	1.1 mEq/tablet (45 mg)	13 mEq/tablet (298 mg)
Potassium phosphate	Intravenous	3 mmol/mL (93 mg)	4.4 mEq/mL (172 mg)	--
Sodium phosphate	Intravenous	3 mmol/mL (93 mg)	--	4 mEq/mL (92 mg)
Sodium Glycerophosphate (Glycophos) <sup>d</sup>	Intravenous	1 mmol/mL (31 mg)	--	2 mEq/mL (46 mg)

<sup>a</sup> Elemental phosphorous 1 mmol equivalent to 31 mg

<sup>b</sup> Potassium 1 mEq equivalent to 39 mg

<sup>c</sup> Sodium 1 mEq equivalent to 23 mg

<sup>d</sup> Imported Fresenius Kabi product from Norway to supplement supply; not FDA approved

## References

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