potassium and sodium phosphates (po-tas-e-um/soe-dee-um fos-fates)
K-Phos M.F, K-Phos Neutral, K-Phos No. 2, Neutra-Phos, Uro-KP Neutral

Classification
Therapeutic: antiuricotics, mineral and electrolyte replacements/supplements
Pregnancy Category C

Indications
Treatment and prevention of phosphate depletion in patients who are unable to ingest adequate dietary phosphate. Adjunct therapy of urinary tract infections with methenamine hippurate or mandelate. Prevention of calcium urinary stones. Phosphate salts of potassium may be used in hypokalemic patients with metabolic acidosis or coexisting phosphate deficiency.

Action
Phosphate is present in muscle and involved in energy transfer and carbohydrate metabolism. Serves as a buffer for the excretion of hydrogen ions by the kidneys. Dibasic potassium phosphate is converted in renal tubule to monobasic salt, resulting in urinary acidification, which is required for methenamine hippurate or mandelate to be active. Phosphate ions increase calcium ion concentration, decreasing calcium stone formation. Therapeutic Effects: Replacement of phosphorus in deficiency states. Urinary acidification. Increased efficacy of methenamine. Decreased formation of calcium urinary tract stones.

Pharmacokinetics
Absorption: Well absorbed following oral administration. Vitamin D promotes GI absorption of phosphates.
Distribution: Phosphates enter extracellular fluids and are then actively transported to sites of action.
Metabolism and Excretion: Excreted mainly (≈90%) by the kidneys.
Half-life: Unknown.

TIME/ACTION PROFILE (effects on serum phosphate levels)
<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tr>
<td>PO</td>
<td>unknown</td>
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Contraindications/Precautions
Contraindicated in: Hyperkalemia (potassium salts); Hyperphosphatemia; Hypocalcemia; Severe renal impairment; Untreated Addison's disease (potassium salts).
Use Cautionally in: Hyperparathyroidism; Cardiac disease; Hypocalcemia (sodium phosphate only); Renal impairment.

Adverse Reactions/Side Effects

Interactions
Drug-Drug: Concurrent use of potassium-sparing diuretics, ACE inhibitors, or angiotensin II receptor blockers with potassium phosphates may result in hyperkalemia. Concurrent use of emtricitabine with sodium phosphate may result in hyperphosphatemia. Concurrent administration of calcium-, magnesium-, or aluminum-containing compounds and phosphate binders inhibits absorption of phosphates by formation of insoluble complexes. Vitamin D enhances the absorption of phosphates.

Drug-Food: Oxalates (in spinach and rhubarb) and phytates (in bran and whole grains) may interfere with absorption of phosphates by binding them in the GI tract.

Route/Dosage
Phosphorous Supplementation
PO (Adults): 250–500 mg (8–16 mmol) phosphorus (1–2 packets) 4 times daily.
PO (Children): 250 mg (8 mmol) phosphorus (1 packet) 4 times daily.

Urinary Acidification
PO (Adults): 2 tablets, twice daily.

Maintenance Phosphorus
PO (Adults): 10–20 mmol/day in divided doses.
PO (Children): 2–3 mmol/kg/day in divided doses.
NURSING IMPLICATIONS

Assessment

- Assess patient for signs and symptoms of hypokalemia (weakness, fatigue, arhythmia, presence of U waves on ECG, polyuria, polydipsia) and hypophosphatemia (anorexia, weakness, decreased reflexes, bone pain, confusion, blood dyscrasias) throughout therapy.

- Monitor intake and output ratios and daily weight. Report significant discrepancies.

- Lab Test Considerations: Monitor serum phosphate, potassium, sodium, and calcium levels prior to and periodically throughout therapy. Increased phosphate may cause hypocalcemia.

- Monitor renal function studies prior to and periodically throughout therapy.

- Monitor urinary pH in patients receiving potassium and sodium phosphate as a urinary acidifier.

Potential Nursing Diagnoses

Imbalanced nutrition: less than body requirements (indications)

Implementation

- PO: Tablets should be dissolved in a full glass of water. Allow mixture to stand for 2–5 min to ensure it is fully dissolved. Solutions prepared by pharmacy should not be further diluted.

- Medication should be administered after meals to minimize gastric irritation and laxative effect.

- Do not administer simultaneously with antacids containing aluminum, magnesium, or calcium.

Patient/Family Teaching

- Explain to the patient the purpose of the medication and the need to take as directed. Take missed doses as soon as remembered unless within 1 or 2 hr of the next dose. Explain that the tablets should not be swallowed whole. Tablets should be dissolved in water.

- Instruct patient in low-sodium diet.

- Advise patient of the importance of maintaining a high fluid intake (drinking at least one 8-oz glass of water each hr) to prevent kidney stones.

- Instruct the patient to promptly report diarrhea, weakness, fatigue, muscle cramps, unexplained weight gain, swelling of lower extremities, shortness of breath, unusual thirst, or tremors.

Evaluation/Desired Outcomes

- Prevention and correction of serum phosphate and potassium deficiencies.

- Maintenance of acid urine.

- Decreased urine calcium, which prevents formation of renal calculi.

Why was this drug prescribed for your patient?