sodium polystyrene sulfonate (soe-dee-un po-lee-stye-reen sul fon-ate)

Sodium polystyrene sulfonate is a cathartic in the treatment of hyperkalemia.

**Classifications**
- Therapeutic: hypokalemic, electrolyte modifiers
- Pharmacologic: cationic exchange resin

**Pregnancy Category**
C

**Indications**
- Exchange sodium ions for potassium ions in the intestine (such 1 g is exchanged for 1 mEq potassium).

**Therapeutic Effects:** Reduction of serum potassium levels.

**Pharmacokinetics**
- Absorption: Distributed throughout the intestine but is nonabsorbable.
- Distribution: Not distributed.
- Metabolism and Excretion: Eliminated in the feces.
- Half-life: Unknown.

**TIME/ACTION PROFILE**

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<tr>
<th>Route</th>
<th>Onset</th>
<th>Peak</th>
<th>Duration</th>
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<tbody>
<tr>
<td>PO</td>
<td>2–12 hr</td>
<td>unknown</td>
<td>6–24 hr</td>
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<tr>
<td>Rect</td>
<td>2–12 hr</td>
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**Contraindications/Precautions**
- Contraindicated in:
  - Life-threatening hyperkalemia (other, more immediate measures should be considered).
  - Hypersensitivity to saccharin or parabens (some products).
  - Ileus; Abnormal bowel function (increased risk for intestinal necrosis).
  - Postoperative patients with no bowel movement (increased risk for intestinal necrosis).
  - History of impaction, chronic constipation, inflammatory bowel disease, ischemic colitis, vascular intestinal atherosclerosis, previous bowel resection, or bowel obstruction (increased risk for intestinal necrosis).
  - Known alcohol intolerance (suspension only).

**Route/Dosage**
- PO: 15 g 1–4 times daily in water (up to 40g4 time daily).
- Rect: 30–50 g as a retention enema; repeat as needed q 6 hr.
- PO, Rect: Children—1 g/kg/dose, q 6 hr.

**NURSING IMPLICATIONS**

- **Assessment**
  - Monitor response of symptoms of hyperkalemia (fatigue, muscle weakness, paresthesia, confusion, dyspnea, peaked T waves, depressed ST segment, prolonged QT intervals, QRS wideness, loss of P waves, and cardiac arrhythmias).
  - Assess for development of hypokalemia (weakness, fatigue, arrhythmias, flat or inverted T waves, prominent U waves).
  - Monitor intake and output ratios and daily weight. Assess for symptoms of fluid overload (dyspnea, rales/crackles, jugular venous distention, peripheral edema). Concurrent low-sodium diet may be ordered for patients with HF.
  - In patients receiving concurrent digoxin, assess for symptoms of digoxin toxicity (anorexia, nausea, vomiting, visual disturbances, arrhythmias).
  - Assess diuresis and urine character and frequency of stools. Discontinue sodium polystyrene sulfonate if patient becomes constipated. Concurrent sodium or lactulose may be ordered to prevent constipation or impaction.
  - Some products contain sorbitol to prevent constipation. Patient should ideally have 1–2 watery stools each day during therapy. Monitor for intestinal necrosis if sorbitol is added.

- **Use Cautiously in:** Geriatric patients; Heart failure; Hypertension; Edema; Sodium restriction; Constipation.

**Adverse Reactions/Side Effects**

- **GI:** INTESTINAL NECROSIS, constipation, fecal impaction, anorexia, gastric irritation, ischemic colitis, nausea, vomiting.

- **F and E:** hypocalcemia, hypokalemia, sodium retention, hypomagnesemia.

- **Drug Interactions**
  - Administration with calcium or magnesium-containing antacids may reduce resin-exchange ability and risk of systemic alkalosis.
  - Hypokalemia may enhance digoxin toxicity.
  - Use with sorbitol may raise risk of colonic necrosis (concomitant use not recommended).

**Nursing Considerations**

- **Pharmacology**
  - Exchange sodium ions for potassium ions in the intestine.
  - Distribution: Nonabsorbable in the intestine.
  - Metabolism and Excretion: Excreted in the feces.
  - Half-life: Unknown.

- **Dosage Forms**
  - Tablets, capsules, orally disintegrating tablets, powders for oral and rectal suspension, suspensions, oral and rectal formulations.

- **Preparation**

  - **PO:**
    - tablet: 15 g
    - capsule: 15 g
    - orally disintegrating tablet: 15 g
    - powder for oral suspension: 15 g
    - oral suspension: 15 g
    - oral solution: 15 g

  - **Rect:**
    - enema: 30–50 g

- **Storage**
  - Store at controlled room temperature.

- **Compatibility**
  - May be compatible with other drugs in the same syringe or administration set.

- **Incompatibilities**
  - May be incompatible with other drugs in the same syringe or administration set.

- **Preparation and Administration**
  - Oral: Administer with food or milk to decrease GI irritation.

- **Patient/Family Education**
  - Patient should drink adequate fluids during therapy.

- **Monitoring Parameters**
  - Monitor serum potassium levels.

- **Pharmacokinetics**
  - Absorption: Distributed throughout the intestine but is nonabsorbable.

- **Therapeutic Effects:** Reduction of serum potassium levels.

- **Metabolism and Excretion:** Eliminated in the feces.

- **Half-life:** Unknown.

- **TIME/ACTION PROFILE**

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● Lab Test Considerations: Monitor serum potassium daily during therapy. Notify health care professional when potassium is 4–5 mEq/L.

● Monitor renal function and electrolytes (especially sodium, calcium, bicarbonate, and magnesium) prior to and periodically throughout therapy.

Potential Nursing Diagnoses

Constipation (Side Effects)

Implementation

● Solution is stable for 24 hr when refrigerated.

● Consult health care professional regarding discontinuation of medications that may increase serum potassium (angiotensin-converting enzyme inhibitors, potassium-sparing diuretics, potassium supplements, salicylates).

● An osmotic laxative (sorbitol) is usually administered concurrently to prevent constipation.

● PO: For oral administration, shake commercially available suspension well before use. When using powder, add prescribed amount to 3–4 mL water, 1/4 tsp of sorbitol. Shake well. Syrup may be ordered to improve palatability. Room cookies or candy recipes are available; discuss with pharmacist or dietician.

Retention Enema

● Prepare retention enema with cleansing enema. Administer solution via rectal tube or 28-French Foley catheter with 30-mL balloon. Insert tube at least 20 cm and tape in place.

● For retention enema, add powder to 100 mL of prescribed solution (usually sorbitol or 20% dextrose in water). Shake well to dissolve powder thoroughly. Solution should be of liquid consistency. Position patient on left side and elevate hips on pillow if solution begins to leak. Follow administration of medication with additional 50–100 mL of dextrose in water to ensure administration of complete dose. Encourage patient to retain enema as long as possible. At least 30–60 min.

● After retention period complete enema with 1–2 L of non-sodium-containing solution. Y-connector with tubing may be attached to Foley or rectal tube; cleansing solution is administered through one port of the Y and allowed to drain by gravity through the other port.

Patient/Family Teaching

● Explain purpose and method of administration of medication to patient.

● Advise patient to avoid taking antacids or laxatives during therapy, unless approved by health care professional; may cause systemic alkalosis.

● Advise female patient to notify health care professional if pregnant or breast feeding.

● Inform patient of need for frequent lab tests to monitor effectiveness.

Why was this drug prescribed for your patient?