salmeterol (sal-me-te-role)
Serevent Diskus

**Classification**
Therapeutic: bronchodilators
Pharmacologic: adrenergics

**Pregnancy Category C**

### Indications
As concomitant therapy for the treatment of asthma and the prevention of bronchospasm in patients who are currently taking but are inadequately controlled on a long-term asthma-control medication (e.g., inhaled corticosteroid). Prevention of exercise-induced bronchospasm. Maintenance treatment to prevent bronchospasm in chronic obstructive pulmonary disease (COPD) including chronic bronchitis and emphysema.

### Action
Produces accumulation of cyclic adenosine monophosphate (cAMP) at beta2-adrenergic receptors. Relatively specific for beta (pulmonary) receptors.

### Therapeutic Effects:
Bronchodilation.

### Pharmacokinetics

- **Absorption:** Minimal systemic absorption follows inhalation.
- **Distribution:** Action is primarily local.
- **Metabolism and Excretion:** Unknown.
- **Half-life:** 3–4 hr.

#### TIME/ACTION PROFILE (bronchodilation)
<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>10–25 min</td>
<td>3–4 hr</td>
<td>12 hr†</td>
</tr>
<tr>
<td>†9 hr in adolescents</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Contraindications/Precautions
- **Contraindicated in:** Hypersensitivity; Acute attack of asthma (onset of action is delayed); Patients not receiving a long-term asthma-control medication (e.g., inhaled corticosteroid).
- **Use Cautiously in:** Cardiovascular disease (including angina and hypertension); Seizure disorders; Diabetes; Glaucoma; Hyperthyroidism; Pheochromocytoma; Excessive use (may lead to tolerance and paradoxical bronchospasm); OB: Use only if potential benefit justifies potential risk to fetus; Lactation: Use only if potential benefit justifies potential risk to infant. Consider discontinuing breast feeding while on salmeterol; Pedi: Children ≤ 4 yr (safety not established); a fixed-dose combination product containing salmeterol and an inhaled corticosteroid should be strongly considered to ensure adherence.

### Adverse Reactions/Side Effects

- **CNS:** headache, nervousness.
- **CV:** palpitations, tachycardia.
- **GI:** abdominal pain, diarrhea, nausea.
- **MS:** muscle cramps/weakness.
- **Neuro:** trembling.
- **Resp:** ASTHMA-RELATED DEATH, paradoxical bronchospasm, cough.

### Interactions
- **Drug-Drug:** Beta blockers may potentiate therapeutic effects. MAO inhibitors and tricyclic antidepressants potentiate cardiovascular effects. Levels and risk of adverse cardiovascular effects when used with potent CYP3A4 inhibitors (e.g., ketoconazole, itraconazole, ritonavir, clarithromycin, indinavir, nefazodone, saquinavir): concurrent use is not recommended.

### Route/Dosage

#### Asthma

- **Inhaln (Adults and Children ≥ 4 yr):** 50 mcg (one inhalation) twice daily (approximately 12 hr apart).

#### Prevention of Exercise-Induced Bronchospasm

- **Inhaln (Adults and Children ≥ 4 yr):** 50 mcg (one inhalation) at least 30 min before exercise; additional doses should not be used for at least 12 hr.

#### COPD

- **Inhaln (Adults):** 50 mcg (one inhalation) twice daily (approximately 12 hr apart).

### Special Population

- **Geriatric Patients:** No dose adjustment.
- **Renal Impairment:** No dose adjustment.
- **Hepatic Impairment:** No dose adjustment.

### Discontinued
NURSING IMPLICATIONS

Assessment

- Assess lung sounds, pulse, and BP below administration and periodically during therapy.
- Monitor pulmonary function tests before initiating therapy and periodically during therapy.
- Observe for paradoxical bronchospasm (wheezing, dyspnea, tightness in chest) and hyperventilation reactions (tachycardia, restlessness, flushed face, lips, or neck). Frequent occurs with first use of new canister or vial. If condition occurs, withhold medication and notify health care professional immediately.

Lab Test Considerations: May cause:

- Serum glucose concentrations; occurs rarely with recommended doses and is more pronounced with frequent use of high doses.
- Serum potassium concentrations, which are usually transient and dose related; rarely occurs at recommended doses and is more pronounced with frequent use of high doses.

Frequent occurs with first use of new canister or vial. If condition occurs, withhold medication and notify physician or other health care professional immediately.

Lab Test Considerations:

- May cause:
  - Elevated serum glucose concentrations; occurs rarely with recommended doses and is more pronounced with frequent use of high doses.
  - Elevated serum potassium concentrations, which are usually transient and dose related; rarely occurs at recommended doses and is more pronounced with frequent use of high doses.

Toxicity and Overdose:

- Symptoms of overdose include persistent agitation, chest pain or discomfort, decreased BP, diaphoresis, hyperirritability, hypesthesia, labile BP, numbness, tremors, and vomiting.

- Treatment includes discontinuing salmeterol and other beta-adrenergic agonists and providing symptomatic, supportive therapy. Cardioselective beta blockers are used cautiously because they may induce bronchospasm.

Potential Nursing Diagnoses

- Ineffective airway clearance (indication)

Implementation

- Salmeterol should be used along with an inhaled corticosteroid, not as monotherapy. Patients taking salmeterol twice daily should not use additional doses for exercise-induced bronchospasm.
- Inhaler: Discard every blister when every diskus has been used or 6 wk have passed, whichever comes first.
- Do not use a spacer with powder for inhalation.

Patient/Family Teaching

- Advise patient to take salmeterol as directed. Do not use more than the prescribed dose. If a regularly scheduled dose is missed, use as soon as possible and resume regular schedule. Do not double doses. If symptoms occur before next dose is due, use a rapid-acting inhaler/bronchodilator.
- Instruct patient using nebulizer for inhalation never to inhale into diskus device and always to hold device in a level horizontal position. Mouthpiece should be kept aseptic.
- Caution patient not to use salmeterol to treat acute symptoms. A rapid-acting inhaler/beta-adrenergic bronchodilator should be used for relief of acute asthma attacks.
- Advise patients on chronic therapy to use additional salmeterol to prevent exercise-induced bronchospasm. Patients using salmeterol for prevention of exercise-induced bronchospasm should not use additional doses of salmeterol or be after prophylactic administration.
- Advise patient to notify health care professional immediately if difficulty in breathing persists after use of salmeterol, if condition worsens, if more than 2 doses of a rapid-acting bronchodilator are used for an acute attack, or if no use is more than 4 doses of a rapid-acting bronchodilator for 2 or more consecutive days or more than 1 canister in an 8-wk period.
- Salmeterol is not used with inhaled corticosteroids and is not a substitute for inhaled corticosteroids or beta-agonists. Advise patients using inhalation or systemic corticosteroids to consult health care professional before stopping or reducing therapy.
- Emphasize the importance of regular follow-up exams to determine progress during therapy.

Evaluation/Desired Outcomes

- Prevention of exercise-induced asthma.
- Prevention of exercise-induced asthma in patients with chronic asthma.
- Prevention of exercise-induced asthma in patients using inhalation or systemic corticosteroids.

Why was this drug prescribed for your patient?