terbutaline (ter-byoo-ta-leen)

**Therapeutic Class:** Bronchodilators

**Pharmacologic Class:** Adrenergics

**Pregnancy Category:** B

**Indications**
- Management of reversible airway disease due to asthma or COPD; inhalation and subcut used for short-term control and oral agent as long-term control.

**Contraindications/Precautions**
- **Contraindicated in:** Hypersensitivity to adrenergic amines.
- **Use Cautiously in:** Cardiac disease; Hypertension; Hyperthyroidism; Diabetes; Glaucoma; Geri: More susceptible to adverse reactions; may require dose adjustments.

**Adverse Reactions/Side Effects**
- **CNS:** Nervousness, restlessness, tremor, headache, insomnia.
- **Resp:** Pulmonary edema.
- **CV:** Angina, arrhythmias, hypertension, myocardial ischemia, tachycardia.
- **GI:** Nausea, vomiting.
- **Endo:** Hyperglycemia.
- **F and E:** Hypokalemia.
- **Other:** Tachycardia, palpitations.

**Interactions**
- **Drug-Drug:** Concomitant use with other adrenergic (sympathomimetic) agents will have additive adrenergic side effects. Use with MAO inhibitors may lead to hypertensive crisis. Beta blockers may negate therapeutic effect.
- **Drug-Natural Products:** Use with caffeine-containing herbs (cola nut, guarana, mate, tea, coffee) may potentiate stimulant effect.

**Route/Dosage**
- **PO (Adults and Children ≥15 yr):** Bronchodilation—2.5–5 mg 3 times daily, given q6h (not to exceed 15 mg/24 hr).
- **PO (Children 12–15 yr):** Bronchodilation—2.5 mg 3 times daily (given q 6 hr) (not to exceed 7.5 mg/24 hr).
- **PO (Children ≤12 yr):** Bronchodilation—0.05 mg/kg 3 times daily (given q6 hr) (not to exceed 0.15 mg/kg 3–4 times daily or 5 mg/24 hr).
- **Subcut (Adults and Children ≥12 yr):** Bronchodilation—250 mcg; may repeat in 15–30 min (not to exceed 500 mcg/4 hr).
- **Subcut (Children ≤12 yr):** Bronchodilation—0.005–0.01 mg/kg; may repeat in 15–20 min.
- **IV (Adults):** Tocolysis—2.5–10 mcg/min infusion; q by 5 mcg/min q 10 min until contractions stop (not to exceed 30 mcg/min). After contractions have stopped for 30 min, p infusion rate to lowest effective amount and maintain for 4–8 hr (unlabeled).

**NURSING IMPLICATIONS**
- **Assessment:**
  - Bronchodilator: Auscult lung sounds, respiratory pattern, pulse, and BP before administration and during period of medication. Note amount, color, and characteristics of sputum produced, and notify health care professional of abnormal findings.

**Contraindications/Precautions**
- **Contraindicated in:** Hypersensitivity to adrenergic amines.
- **Use Cautiously in:** Cardiac disease; Hypertension; Hyperthyroidism; Diabetes; Glaucoma; Geri: More susceptible to adverse reactions; may require dose adjustments.
- **Excessive use may lead to tolerance and paradoxical bronchospasm (unlabeled).**
- **OB, Lactation:** Pregnancy (near term) and lactation.

**Interactions**
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Monitor pulmonary function tests before initiating therapy and periodically throughout therapy to determine effectiveness of medication.

Preterm Labor:

- Monitor maternal pulse and BP, frequency and duration of contractions, and fetal heart rate. Notify health care professional if contractions persist or increase in frequency or duration or if symptoms of maternal or fetal distress occur. Maternal side effects include tachycardia, palpitations, tinnitus, anxiety, and headache.
- Assess maternal respiratory status for symptoms of pulmonary edema (increased rate, dyspnea, rales/crackles, frothy sputum).
- Monitor mother and neonate for symptoms of hypoglycemia (anxiety; chills; cold sweats; confusion; cool, pale skin; difficulty in concentration; drowsiness; excessive hunger; fast pulse; headache; irritability; nausea; nervousness; unusual tiredness; weakness) and mother for hypokalemia (weakness, fatigue, U wave on ECG, arrhythmias).
- Lab Test Considerations: May cause transient increase in serum potassium concentration with higher than recommended doses.
- Monitor maternal serum glucose and electrolytes. May cause hypokalemia and hypoglycemia. Monitor neonate’s serum glucose, because hypoglycemia may also occur in neonates.
- Toxicity and Overdose: Symptoms of overdose include persistent agitation, chest pain or discomfort, decreased BP, diaphoresis, hypokalemia, hypoglycemia, tachycardia, tachyarrhythmias, and vomiting.

Potential Nursing Diagnoses

- Ineffective airway clearance (Indications)

Implementation

- Do not confuse Brethine (terbutaline) with Methergine (methylergonovine).
- PO: Administer mitotane to minimize gastric irritation.
- Tablet may be crushed and mixed with food or fluids for patients with difficulty swallowing.
- Subcut: Administer subcut injections in lateral deltoid area. Do not use solution if discolored.

IV Administration

- pH: 3.0–5.0
- Continuous Infusion: Diluent: May be diluted in D5W, 0.9% NaCl, or 0.45% NaCl. Concentration: 1 mg/mL (undiluted). Rate: Use infusion pump to ensure accurate dose. Begin infusion at 1 mg/hr, increase by 1 mg every 10 min until contractions cease. Maximum dose is 80 mg/hr. Begin to taper dose in 5 mg decrements after a 10–60 min contraction free period is attained. Switch to oral dose form after patient is contraction-free 4–6 hr on the lowest effective dose.
- Y-Site Compatibility: insulin.

Patient/Family Teaching

- Instruct patient to take medication as directed. If on a scheduled dosing regimen, take missed dose as soon as possible, space remaining doses at regular intervals. Do not double doses. Caution patient not to exceed recommended dose; may cause adverse effects, paradoxical bronchospasm, or loss of effectiveness of medication.
- Instruct patient to contact health care professional immediately if shortness of breath is not relieved by medication or is accompanied by diaphoresis, dizziness, palpitations, or chest pain.
- Advise patient to consult health care professional before taking any OTC medications or alcoholic beverages concurrently with this therapy. Caution patient also to avoid smoking and other respiratory irritants.
- Preterm Labor: Notify health care professional immediately if labor resumes or if significant side effects occur.

Evaluation/Desired Outcomes

- Prevention or relief of bronchospasm.
- Improvement in ease of breathing.
- Control of preterm labor in a fetus of 20–36 wk gestational age.

Why was this drug prescribed for your patient?