**Propylthiouracil** (proe-pill thye-oh-yoor a-sill)

**Classification** Therapeutic: antithyroid agents
Pharmacologic: thioamides

**Pregnancy Category D**

**Indications**
Patients with Graves’ disease with hyperthyroidism or toxic multinodular goiter who are intolerant to methimazole and for whom surgery or radioactive iodine therapy is not appropriate. Adjunct in the control of hyperthyroidism in preparation for thyroidectomy or radioactive iodine therapy in patients who are intolerant to methimazole.

**Action**
Inhibits the synthesis of thyroid hormones. **Therapeutic Effects:** Decreased signs and symptoms of hyperthyroidism.

**Pharmacokinetics**
- **Absorption:** Rapidly absorbed from the GI tract.
- **Distribution:** Concentrates in the thyroid gland; crosses the placenta and enters breast milk in low concentrations.
- **Metabolism and Excretion:** Metabolized by the liver.
- **Half-life:** 1–2 hr.

**TIME/ACTION PROFILE (effects on clinical thyroid status)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>10–21 days†</td>
<td>6–10 wk</td>
<td>wk</td>
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†Effects on serum thyroid hormone concentration may occur within 60 min of a single dose.

**Contraindications/Precautions**
- **Contraindicated in:** Hypersensitivity.

- **Use Cautiously in:**
  - bone marrow reserve;
  - OB: May be used safely; however, fetus may develop thyroid problems; mother and fetus may be at risk for hepatotoxicity;
  - Lactation: Safety not established;
  - Geri: May have sensitivity; should initiate therapy with lowest dose;
  - Pedi: Children <6 yr (safety not established); not recommended unless methimazole not tolerated or surgery or radioactive iodine therapy not appropriate.

**Adverse Reactions/Side Effects**
- **CNS:** Drowsiness, headache, vertigo.
- **GI:** Hepatotoxicity, nausea, vomiting, diarrhea, loss of taste.
- **Derm:** Rash, drug desensitization, angioedema, pruritus, toxic erythroderma.
- **Hemat:** Agranulocytosis, leukopenia, thrombocytopenia, MN: arthralgia.

**Interactions**
- **Drug-Drug:** Additive bone marrow depression with antineoplastics or radiation therapy. Additive antithyroid effects with lithium, potassium iodide, or sodium iodide.

**Route/Dosage**
- **PO (Adults):**
  - 100 mg q 8 hr; may be q 6–12 hr to 400 mg/day (occasional patient may require 600–900 mg/day); usual maintenance dose = 100–200 mg/day.

- **PO (Children >10 yr):** 50–300 mg/day given once daily or in 2–4 divided doses.

- **PO (Children 6–10 yr):** 50–150 mg/day given once daily or in 2–4 divided doses.

**NURSING IMPLICATIONS**
- **Assessment**
  - Monitor response of symptoms of hyperthyroidism or thyrotoxicosis (tachycardia, palpitations, nervousness, insomnia, fever, diaphoresis, heat intolerance, tremors, weight loss, diarrhea).
  - Assess patient for development of hypothyroidism (intolerance to cold, constipation, dry skin, headache, lethargy, tenderness, or weakness). Dose adjustment may be required.
  - Assess patient for skin rash or swelling of cervical lymph nodes. Treatment may be discontinued if this occurs.
  - **Lab Test Considerations:** Thyroid function studies should be monitored prior to therapy, monthly during initial dosages, and every 2–3 mo throughout therapy. WBC and differential counts should be monitored periodically throughout course of therapy. Agammaglobulinemia may develop rapidly and usually occurs during first 2 mos. This necessitates discontinuation of therapy.

**NURSE-PATIENT CONVERSATION**
- **Purpose:** Decreased signs and symptoms of hyperthyroidism.

**Patient/Family Teaching**
- Instruct patient to take medication exactly as directed. Advise patient to avoid alcohol and other CNS depressants. Advise patient to report fever, lymphadenopathy, parotitis, skin rash, or swelling of cervical lymph nodes. Advise patient to report symptoms of hypothyroidism. Instruct patient to report symptoms of agranulocytosis (fever, sore throat, mouth sores, diarrhea), hepatitis, jaundice, or any skin rash. Advise patient to use sunscreen and protective clothing to prevent sun exposure during therapy. Avoid exposure to infections. As appropriate, review all aspects of the patient education and provide patient guidelines.**
Potential Nursing Diagnoses

Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Noncompliance (Patient/Family Teaching)

Implementation

● Do not confuse propylthiouracil with Purinethol (mercaptopurine).

● Can be compounded by pharmacist into enema or suppository.

● PO: Administer at same time in relation to meals every day. Food may either increase or decrease absorption.

Patient/Family Teaching

● Instruct patient to take medication exactly as directed, around the clock. If a dose is missed, take as soon as remembered; take both doses together if almost time for next dose, check with health care professional if more than 1 dose is missed. Consult health care professional prior to discontinuing medication.

● Instruct patient to monitor weight 2–3 times weekly. Report significant changes.

● May cause drowsiness. Caution patient to avoid driving or other activities requiring alertness until response to medication is known.

● Advise patient to consult health care professional regarding dietary sources of iodine (iodized salt, shellfish).

● Advise patient to report sore throat, fever, chills, headache, malaise, weakness, yellowing of eyes or skin, unusual bleeding or bruising, symptoms of hyperthyroidism or hypothyroidism, or rash to health care professional promptly.

● Advise patient to carry identification describing medication regimen at all times and to notify health care professional of medication regimen prior to treatment or surgery.

Evaluation/Desired Outcomes

● Decrease in severity of symptoms of hyperthyroidism (lowered pulse rate and weight gain).

Why was this drug prescribed for your patient?

● Return of thyroid function studies to normal.

● May be used as short-term adjuvant therapy to prepare patient for thyroidectomy or radiation therapy or may be used as treatment of hyperthyroidism. Treatment of 6 mo to several yr may be necessary, usually averaging 1 yr.