tetracycline (te-tra-sye-kleen)

**Classification**
Therapeutic: anti-infectives
Pharmacologic: tetracyclines

**Pregnancy Category D**

**Indications**

**Action**
Inhibits bacterial protein synthesis at the level of the 30S bacterial ribosome.

**Therapeutic Effects:**
Bacteriostatic action against susceptible bacteria.

**Spectrum:**
Includes activity against some gram-positive pathogens: Bacillus anthracis, Clostridium perfringens, Clostridium tetani, Listeria monocytogenes, Saccharomyces, Propionibacterium acnes, Actinomyces israelii. Active against some gram-negative pathogens: Haemophilus influenzae, Legionella pneumophila, Listeria monocytogenes, Neisseria gonorrhoeae, Neisseria meningitidis. Also active against several other pathogens, including: Mycoplasma, Treponema pallidum, Chlamydia, Rickettsia, B. burgdorferi.

**Pharmacokinetics**
Absorption: 60–80% absorbed after oral administration.

Distribution: Widely distributed, some CSF and good bone penetration; crosses the placenta and enters breast milk.

Metabolism and Excretion: Excreted mostly unchanged by the kidneys.

**Half-life:** 6–12 hr.

**TIME/ACTION PROFILE (blood levels)**

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<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tr>
<td>PO</td>
<td>1–2 hr</td>
<td>2–4 hr</td>
<td>6–12 hr</td>
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**Contraindications/Precautions**

Contraindicated in: Hypersensitivity, Some products contain alcohol or benzyl alcohol and should be avoided in patients with known hypersensitivity or intolerance. Pregnancy: Children <8 yr (permanent staining of teeth), OB: Risk of permanent staining of teeth in infant of mother during last half of pregnancy. Lactation: Lactation.

Use Cautiously in: Cachectic or debilitated patients; Renal disease; Nephrogenic diabetes insipidus.

**Adverse Reactions/Side Effects**

CNS: benign intracranial hypertension in children, dizziness.

GI: diarrhea, nausea, vomiting, esophagitis, hepatotoxicity, pancreatitis.

Derm: photosensitivity, rashes.

Hemat: blood dyscrasias.

Misc: hypersensitivity reactions, superinfection.

**Interactions**

**Drug-Drug:**
May q the effect of warfarin. May p the effectiveness of estrogen-containing oral contraceptives. Antacids, calcium, Iron, and magnesium form insoluble compounds (chelates) and p absorption of tetracycline. Sucralfate may bind to tetracycline and prevent its absorption from the GI tract. Cholestyramine omits absorption. Adsorbent antidiarrheal agents may p absorption. Barbiturates, phenytoin, or carbamazepine may p activity of doxycycline.

**Drug-Food:** Calcium in foods or dairy products p absorption by forming insoluble compounds (chelates).

**Route/Dosage**

**PO (Adults):**
250–500 mg q6h or 500 mg q12h. Chronic treatment of acne—500 mg–2 g/day for 3 wk, then 125 mg–1 g/day.

**PO (Children >8 yr):**
6.25–12.5 mg/kg q6 hr or 12.5–25 mg/kg q12 hr.

**NURSING IMPLICATIONS**

**Assessment**

- Infection: Pus for infection (vital signs, appearance of wound, sputum, urine, and stools); WBC at beginning of and throughout therapy.
- Obtain specimen for culture and sensitivity before initiating therapy. First dose may be given before receiving results.

**Lab Test Considerations:**
Renal and hepatic functions and CBC should be monitored periodically during long-term therapy.

**Contraindicated:** Discontinued.
**Potential Nursing Diagnoses**

- Risk for infection (indicators): (side effects)
- Deficient knowledge, related to medication regimen (Patient/Family Teaching)
- Noncompliance (Patient/Family Teaching)

**Implementation**

- May cause q AST, ALT, serum alkaline phosphatase, bilirubin, and amylase concentrations. Tetracyclines, except doxycycline, may cause elevated serum BUN.
- May cause false q in urinary catecholamine levels.

**Potential Nursing Diagnoses**

- Risk for infection (indicators): (side effects)
- Deficient knowledge, related to medication regimen (Patient/Family Teaching)
- Noncompliance (Patient/Family Teaching)

**Implementation**

- May cause yellow-brown discoloration and softening of teeth and bones if administered prenatally or during early childhood. Not recommended for children 8 years of age or during pregnancy or lactation.
- PO: Administer around the clock. Administer at least 1 hr before or 2 hr after meals. Administer with a full glass of liquid at least 1 hr before going to bed to avoid esophageal ulceration.
- Avoid administration of calcium, antacids, magnesium-containing medications, sodium bicarbonate, or iron supplements within 1–3 hr of tetracycline.

**Patient/Family Teaching**

- Instruct patient to take medication around the clock and to finish the drug completely, as directed, even if feeling better. If dose is missed, take as soon as possible until almost time for next dose; do not double doses. Advise patient that sharing of this medication may be dangerous.
- Instruct patient to avoid taking milk or other dairy products concurrently with tetracycline. Also avoid taking antacids, calcium, magnesium-containing medications, sodium bicarbonate, and iron supplements within 1–3 hr of tetracycline.
- Caution patient to use sunscreen and protective clothing to prevent photosensitivity reactions.
- Advise patient to report the signs of superinfection (black, furry overgrowth on the tongue; vaginal itching or discharge; loose or foul-smelling stools). Skin rash, pruritus, and urticaria should also be reported.
- Advise patient to notify health care professional of medication regimen before treatment or surgery.
- Advise female patients to use a nonhormonal method of contraception while taking tetracycline and until next menstrual period.

**Evaluation/Desired Outcomes**

- Resolution of the signs and symptoms of infection. Length of time for complete resolution depends on the organism and site of infection.
- Decrease in acne lesions.

**Why was this drug prescribed for your patient?**