TOLButamide (tole-byeoo-ta-mide)

Classification
Therapeutic: antidiabetics
Pharmacologic: sulfonylureas

Pregnancy Category C

Indications
PO: Control of blood sugar in type 2 diabetes mellitus when diet therapy fails. Requires some pancreatic function.

Action
Lowers blood sugar by stimulating the release of insulin from the pancreas and increasing the sensitivity to insulin at receptor sites. May also decrease hepatic glucose production.

Therapeutic Effects: Lowering of blood sugar in diabetic patients.

Pharmacokinetics
Absorption: Well absorbed following oral administration.
Distribution: Unknown.
Protein Binding: 96%.
Metabolism and Excretion: Mostly metabolized by the liver.
Half-life: 7 hr (range 4–25 hr).

TIME/ACTION PROFILE (hypoglycemic activity)

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<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>PO</td>
<td>60 min</td>
<td>4–6 hr</td>
<td>6–12 hr</td>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity (cross-sensitivity with sulfonamides may occur); Type 1 diabetes; Diabetes coma or ketoacidosis; Severe renal, hepatic, thyroid, or other endocrine disease; Uncontrolled infection, sepsis, burns, or trauma. Use Cautiously in: Severe cardiovascular disease; Hepatic or renal impairment (? risk of hypoglycemia); Infection, stress, or changes in diet may alter requirements for control of blood sugar; Impaired thyroid, pituitary, or adrenal function; Malnutrition; high fever, prolonged anemia, or vomiting; Geri: ↓ sensitivity; dose ↓ may be required. OB, Lactation: Safety not established; insulin recommended during pregnancy.

Adverse Reactions/Side Effects

Interactions
Drug-Drug: Ingestion of alcohol may result in disulfiram-like reaction. Effectiveness may be ↓ by concurrent use of diuretics, corticosteroids, phenothiazines, hormonal contraceptives, estrogens, oral anticoagulants, phenytoin, rifampin, sympathomimetics, and isoniazid. Alcohol, androgens (testosterone), chloramphenicol, clofibrate, MAO inhibitors, NSAIDs (except diclofenac), and sulfonamides may ↑ the risk of hypoglycemia. Concurrent use with warfarin may alter the response to both agents (? effects of both initially, dose ↓ of either; close monitoring recommended during any changes in dosage). Beta blockers may mask the signs and symptoms of hypoglycemia. Fenugreek, chromium, and coenzyme Q-10 may produce additive hypoglycemic effects.

Route/Dosage
PO (Adults): 1000–2000 mg/day in single or divided doses; then adjusted to maintenance dose of 250–2000 mg/day (some patients may require up to 3000 mg/day).

NURSING IMPLICATIONS
Assessment
• Observe patient for signs and symptoms of hypoglycemic reactions (sweating, hunger, weakness, dizziness, tremor, tachycardia, anxiety). Patients on concurrent beta-blocker therapy may have very subtle signs and symptoms of hypoglycemia.
• Monitor intake and output ratios and dietary intake. Notify health care professional promptly if peripheral edema, rales/crackles, or a significant discrepancy in totals develops.

Other common side effects include:
- Headache:
- Nausea:
- Diarrhea:
- Constipation:

O - Occasional  F - Frequently  S - Sometimes  R - Rarely  X - Excessive  * - Life-threatening  ** - Discontinued.
Lab Test Considerations: Serum glucose and hemoglobin A1C should be monitored periodically throughout therapy to evaluate effectiveness of treatment.

Monitor CBC periodically throughout therapy. Notify health care professional promptly if decrease in blood counts occurs.

May cause an increase in AST, ALT, BUN, and serum creatinine.

Excretion and Overdose: Overdosage is manifested by symptoms of hypoglycemia. Mild hypoglycemia may be treated with administration of oral glucose. Severe hypoglycemia should be treated with IV D50W followed by continuous IV infusion of more diluted dextrose solution at a rate sufficient to keep serum glucose at approximately 100 mg/dL.

Toxicity and Overdose: Overdose is manifested by symptoms of hypoglycemia. Mild hypoglycemia may be treated with administration of oral glucose. Severe hypoglycemia should be treated with IV D50W followed by continuous IV infusion of more diluted dextrose solution at a rate sufficient to keep serum glucose at approximately 100 mg/dL.

Potential Nursing Diagnoses
- Imbalanced nutrition: more than body requirements (indications)
- Noncompliance (patient/family teaching)

Implementation
- High Alert: Accidental administration of oral hypoglycemic agents to non-diabetic adults and children has resulted in serious harm or death. Before administering, confirm that patient has Type 2 diabetes. Do not confuse tolbutamide with tolazamide.

- Patients stabilized on a diabetic regimen who are exposed to stress, fever, trauma, infection, or surgery may require administration of insulin.

- To convert from other oral hypoglycemic agents or insulin dosage of 20 units/day, change can be made without gradual dosage adjustment. Patients taking 20–40 units/day should convert gradually by receiving oral hypoglycemic agent and a 25–50% reduction in insulin dose the 1st day, with gradual insulin dosage adjustment as tolerated. Monitor serum glucose and urine ketones at least 3 times/day during conversion.

- PO: May be administered once in the morning or divided into 2 doses. Administer with meals to ensure best diabetic control and minimize gastric irritation. Do not administer after last meal of the day.

- Tablets may be crushed and taken with fluids if patient has difficulty swallowing.

Patient/Family Teaching
- Instruct patient to take medication at same time each day. If a dose is missed, take as soon as remembered unless almost time for next dose. Do not take if unable to eat.

- Explain to patient that this medication controls hyperglycemia but does not cure diabetes. Therapy is long-term.

- Review signs of hyperglycemia and hypoglycemia with patient. Hyperglycemia occurs, advise patient to drink a glass of orange juice or ice tea 2–3 tsp of sugar, honey, or corn syrup dissolved in water or an appropriate number of glucose tabs and notify health care professional.

- Insurgence patient to follow prescribed diet, medication, and exercise regimen to prevent hypoglycemic or hyperglycemic episodes.

- Instruct patient to prepare for testing of serum glucose and urine ketones. These tests should be closely monitored during periods of stress or illness and health care professional notified if significant changes occur.

- If occasionally causes dizziness or drowsiness. Caution patient to avoid driving or other activities requiring alertness until response to medication is known.

- Caution patient to avoid other medications, especially aspirin and alcohol, while on this change without consulting health care professional.

- Concurrent use of alcohol may cause a disulfiram-like reaction (abdominal cramps, nausea, flushing, headaches, and hypoglycemia).

- Caution patient to use sunscreen and protective clothing to prevent photosensitivity reactions.

- Advise patient to inform health care professional of medication regimen prior to treatment or surgery.

- Advise patient to monitor for side effects during treatment of hypoglycemia.

- Advise patient to use a form of contraception other than oral contraceptive and to notify health care professional promptly if pregnancy is planned or suspected.

- Emphasize the importance of routine follow-up exams.

Evaluation/Desired Outcomes
- Control of blood glucose levels without hypoglycemic episodes.

Why was this drug prescribed for your patient?