acarbose  (a-ka-car-bose)

Precise Classification
Therapeutic: antidiabetics
Pharmacologic: alpha-glucosidase inhibitors
Pregnancy Category B

Indications
Management of type 2 diabetes in conjunction with dietary therapy; may be used with insulin or other hypoglycemic agents.

Action
Lowers blood glucose by inhibiting the enzyme alpha-glucosidase in the GI tract. Delays and reduces glucose absorption.

Therapeutic Effects:
Lowering of blood glucose in diabetic patients, especially postprandial hyperglycemia.

Pharmacokinetics
Absorption: 2% systemically absorbed; action is primarily local (in the GI tract).

Distribution: Unknown.

Metabolism and Excretion: Minimal amounts absorbed are excreted by the kidneys.

Half-life: 2 hr.

TIME/ACTION PROFILE (effect on blood glucose)

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<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tr>
<td>PO</td>
<td>unknown</td>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity; Diabetic ketoacidosis; Cirrhosis; Serum creatinine > 2 mg/dL; OB, Lactation, Pedi: Safety not established.

Use Cautiously in:
- Presence of fever, infection, trauma, stress (may cause hyperglycemia, requiring alternative therapy).

Adverse Reactions/Side Effects

- GI: abdominal pain, diarrhea, flatulence, transaminases.

- CV: hypotension, dizziness.

- Other: transient increase in flatulence, diarrhea, and abdominal discomfort. Acarbose alone does not cause hypoglycemia; however, other concurrently administered hypoglycemic agents may produce hypoglycemia requiring treatment.

Interactions

- Drug-Class: Thiazide diuretics and loop diuretics, corticosteroids, phenothiazines, thyroid preparations, estrogens (conjugated), progestins, hormonal contraceptives, phenytoin, theophylline, sympathomimetics, calcium channel blockers, and metoclopramide. May decrease efficacy of oral hypoglycemic agents and lead to increases in blood glucose. Effects are by intestinal adsorbents, including activated charcoal and digestive enzyme preparations (amylase, pancreatin); avoid concurrent use. Effects of sulfonylurea hypoglycemic agents may require dosage adjustment.

- Drug-Natural Product: Glucosamine may worsen blood glucose control. Chromium and coenzyme Q-10 may increase hypoglycemic effects.

Route/Dosage

PO (Adults): 25 mg 3 times daily; may be increased q 4–8 wk as needed/tolerated (range 50–100 mg 3 times daily; not to exceed 50 mg 3 times daily in patients < 60 kg or 100 mg 3 times daily in patients ≥ 60 kg).

NURSING IMPLICATIONS

Assessment
- Observe patient for signs and symptoms of hypoglycemia (sweating, hunger, weakness, dizziness, tremor, tachycardia, anxiety) when taking concurrently with other oral hypoglycemic agents.
- Lab Test Considerations: Monitor serum glucose and hemoglobin A1C periodically during therapy to evaluate effectiveness.
- Monitor AST and ALT every 3 mo for the 1st yr and then periodically. Elevated levels may require dose reduction or discontinuation of acarbose. Elevation occurs more commonly in patients taking more than 300 mg/day and in female patients. Levels usually return to normal without other evidence of liver injury after discontinuation.

- Stability and Storage: Solutions are stored in a refrigerator, but may be stored at room temperature for up to 2 wk. Store between 2 and 8°C (36 and 46°F).

Potential Nursing Diagnoses

- Diabetic control, more than body requirements (Indications)
- Gastrointestinal disturbance, more than body requirements

- Noncompliance (Patient/Family Teaching)

- Risk for injury (Contraindications, side effects, interactions)

- Risk for infection (Contraindications, side effects, interactions)

- Risk for metabolic alteration: hyperglycemia (Indications, side effects, interactions)

- Risk for metabolic alteration: hypoglycemia (Indications, side effects, interactions)

- Knowledge deficit (Patient/Family Teaching)
Implementation

- Patients stabilized on a diabetic regimen who are exposed to stress, fever, trauma, infection, or surgery may require administration of insulin.
- Does not cause hypoglycemia when taken while fasting, but may increase hypoglycemic effect of other hypoglycemic agents.
- PO: Administer with first bite of each meal 3 times/day.

Patient/Family Teaching

- Instruct patients to take acarbose at same time each day. If a dose is missed and the meal is completed without taking the dose, skip missed dose and take next dose with the next meal. Do not double doses.
- Explain to patient that acarbose controls hyperglycemia but does not cure diabetes. Therapy is lifelong.
- Review signs of hypoglycemia and hyperglycemia: dizziness, drowsiness, dry mouth, flushed, dry skin; taste, faint breath odor; increased urination; ketosis in urine; loss of appetite; emotional lability; nausea or vomiting; tenderness; rapid, deep breathing; unusual thirst) with patient. If hyperglycemia occurs, advise patient to take a form of oral glucose (e.g., glucose tablets, liquid oral glucose) rather than sugar (absorption of sugar is blocked by acarbose) and notify health care professional.
- Encourage patients to follow prescribed diet, medication, and exercise regimen to prevent hypoglycemic or hyperglycemic episodes.
- Instruct patient in proper testing of serum glucose and urine ketones. Monitor closely during periods of stress or illness. Notify health care professional if significant changes occur.
- Caution patient to avoid using other medications without consulting health care professional.
- Advise patient to inform health care professional of medication regimen before treatment or surgery.
- Advise patient to carry a form of oral glucose and identification describing disease process and medication regimen at all times.
- Emphasize the importance of routine follow-up examinations.

Evaluation/Desired Outcomes

- Control of blood glucose levels without the appearance of hypoglycemic or hyperglycemic episodes.

Why was this drug prescribed for your patient?