Insulin glargine (in-so-lin glar-jeen)

Latanex

Therapeutic: Hormones
Pharmacologic: Pancreatics

Pregnancy Category C

Indications
Control of hyperglycemia in patients with type 1 and type 2 diabetes mellitus.

Action
Lowers blood glucose by stimulating glucose uptake in skeletal muscle and fat, inhibiting hepatic glucose production. Other actions of insulin: inhibition of lipolysis and proteolysis, enhanced protein synthesis. Therapeutic Effects: Control of hyperglycemia in diabetic patients.

Pharmacokinetics
Absorption: Provides slower prolonged absorption and a relatively constant concentration over 24 hr.
Distribution: Identical to endogenous insulin.
Metabolism and Excretion: Partially metabolized at the site of injection to active insulin metabolites. Metabolized by liver, spleen, kidney, muscle.
Half-life: 5–6 min (prolonged in diabetic patients; biological half-life is longer). Therapeutic Effect on Glycemic Control

TIME/ACTION PROFILE (hypoglycemic effect)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>Subc</td>
<td>3–4 hr</td>
<td>none†</td>
<td>24 hr</td>
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†Small amounts of insulin glargine are slowly released resulting in a relatively constant effect over time.

Contraindications/Precautions
Contraindicated in: Hypoglycemia. Allergy or hypersensitivity to insulin glargine.

Adverse Reactions/Side Effects

Interactions
Drug-Drug: Beta blockers, clonidine, and reserpine may mask some of the signs and symptoms of hypoglycemia. Corticosteroids, thyroid supplements, contraceptives, oral hypoglycemic agents, and salicylates may ↓ insulin requirements. Concurrent use with pioglitazone or rosiglitazone may ↑ risk of fluid retention and worsening HF; pioglitazone or rosiglitazone may ↓ risk of fluid retention and worsening HF. Drug-Natural Products: Glucosamine may worsen blood glucose control. Fenugreek, chromium, and coenzyme Q-10 may produce additive hypoglycemic effects.

Route/Dosage
Subcut (Adults and Children ≥6 yr): Initiation in patients with type 2 diabetes already being treated with oral antidiabetic agents—10 units once daily then adjusted on the basis of patient’s needs (range 2–100 units/day). Concomitant use with other intermediate- or long-acting insulin—Use 80% of the total daily NPH or once daily dose since daily, then adjusted on the basis of patient’s needs.

Nursing Implications

Assessment

Monitor for symptoms of hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; cold sweat; confusion; cool, pale skin; dizziness; difficulty in concentration; dizzi-ness; elevated heart rate; shortness of breath; weakness) and hyperglycemia (confusion, drowsiness; flushed, dry skin; fruity breath odor; increased thirst; loss of appetite; rapid, deep breathing, polyuria) periodically during therapy. Monitor body weight periodically. Changes in weight may necessitate changes in insulin dosing.

Lab Test Considerations: Monitor blood glucose every 6 hr during therapy, more frequently in hypoglycemia and times of stress. A1C may be monitored every 3–6 mo to determine effectiveness.

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Nursing Implications

Assessment

Monitor for symptoms of hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; cold sweat; confusion; cool, pale skin; dizziness; difficulty in concentration; dizziness; sudden onset of sedative effects; excessive hunger; headache; irritability; nausea; nervousness; palpitations; tremor; unusual sleepiness; frequent urination; flushed, dry skin; fruity breath odor; rapid, deep breathing, polyuria; loss of appetite; unusual thirst; periodicity during therapy. Monitor body weight periodically. Changes in weight may necessitate changes in insulin dosing.

Lab Test Considerations: Monitor blood glucose every 6 hr during therapy, more frequently in hypoglycemia and times of stress. A1C may be monitored every 3–6 mo to determine effectiveness.
Toxicity and Overdose: Overdose is manifested by symptoms of hypoglycemia. Mild hypoglycemia may be treated by ingestion of oral glucose. Severe hypoglycemia is a life-threatening emergency; treatment consists of IV glucose, glucagon, or epinephrine. Recovery from hypoglycemia may be delayed due to the prolonged effect of subcut insulin glargine.

**Potential Nursing Diagnoses**

Noncompliance (Patient/Family Teaching)

**Implementation**

**High Alert:** Medication errors involving insulins have resulted in serious patient harm and death. Clarify all ambiguous orders and do not accept orders using the abbreviation “u” for units, which can be misread as a zero or the numeral 4 and has resulted in serious overdoses. Similar insulins are available in different types and strengths. Check type, dose, and expiration date with another licensed nurse. Do not interchange insulins without consulting physician or other health care professional.

- When transferring from once-daily NPH human insulin to insulin glargine, the dose usually remains unchanged. When transferring from twice-daily NPH human insulin to insulin glargine, the initial dose of insulin glargine is usually reduced by 20%.

- Do not mix insulin glargine with any other insulin or solution, or use syringes containing any other medicinal product or residue. Solution should be clear and colorless with no particulate matter.

- Use only insulin syringes to draw up dose. Insulin syringe or SoloStar can be used for administration. Prior to withdrawing dose, rotate vial between palms to ensure uniform solution; do not shake.

- Store unopened vials and cartridges in the refrigerator; do not freeze. If unable to refrigerate, the 10-mL vial can be kept in a cool place unrefrigerated for up to 28 days. Once the cartridge is placed in an SoloStar, do not refrigerate.

- Subcut: Administration should be once daily at any time during the day, but at the same time each day. Do not administer IV or use with insulin pumps.

**Patient/Family Teaching**

- Instruct patient on proper technique for administration. Include: type of insulin, equipment (syringe, cartridge pens, alcohol swabs), storage, and place to discard syringes. Discuss the importance of selection and rotation of injection sites, and compliance with therapeutic regimen.

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

- Instruct patient in proper testing of serum glucose and ketones. These tests should be closely monitored during periods of stress or illness and health care professional should be notified of any significant changes.

- Emphasize the importance of compliance with nutritional guidelines and regular exercise as directed by health care professional.

- Instruct patient in need of health care professional of all Rx or OTC medications, treatments, herbal products, or alcohol.

- Advise patient to notify health care professional of any new illness or hospitalization.

**Evaluation/Desired Outcomes**

- Control of blood glucose levels in diabetic patients without the appearance of hypoglycemia or hyperglycemia episodes.

Why was this drug prescribed for your patient?