Liraglutide (lie-a-gloo-tide)

**Classifications**
- Antidiabetics
- Pharmacologic: glucagon-like peptide-1 (GLP-1) receptor agonists
- Pregnancy Category: C

**Indications**
Adjunct treatment in diet and exercise in the management of adults with type 2 diabetes mellitus, not recommended as first-line therapy, as a substitute for insulin, in patients with type 1 diabetes, or for ketosis.

**Action**
Acts as an acylated human Glucagon-Like Peptide-1 (GLP-1, an incretin) receptor agonist; increases intracellular cyclic AMP (cAMP) leading to insulin release when glucose is elevated, which then subsides as blood glucose decreases toward euglycemia. Also decreases glucagon secretion and delays gastric emptying.

**Therapeutic Effects:**
Improved glycemic control.

**Pharmacokinetics**
- **Absorption:** 55% absorbed following subcutaneous injection.
- **Distribution:**
- **Protein Binding:** 98%.
- **Metabolism and Excretion:** Endogenously metabolized.
- **Half-life:** 13 hr.

**TIME/ACTION PROFILE (p in HbA1c)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>Subcut</td>
<td>within 4 wk</td>
<td>8 wk</td>
<td>unk</td>
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**Contraindications/Precautions**
Contraindicated in:
- Hypersensitivity; Personal or family history of medullary thyroid carcinoma (MTC)/multiple endocrine neoplasia syndrome type 2 (MEN 2);
- Type 1 diabetes; Diabetic ketoacidosis.

**Adverse Reactions/Side Effects**
- **CNS:** headache.
- **Derm:** pruritis, rash.
- **Endo:** THYROID C-CELL TUMORS.
- **GI:** PANCREATITIS, diarrhea, nausea, vomiting, constipation.
- **GU:** acute renal failure.
- **Local:** HYPERSENSITIVITY REACTIONS INCLUDING ANAPHYLAXIS AND ANGIOEDEMA, injection site reactions.

**Interactions**
- **Drug-Drug:** Concurrent use with agents that increase insulin secretion including sulfonylureas may increase the risk of serious hypoglycemia, use cautiously and consider dose adjustment of agent increasing insulin secretion. May alter absorption of concomitantly administered oral medications due to delayed gastric emptying.

**Route/Dosage**
- **Subcut (Adults):** 0.6 mg once daily initially, may be increased at weekly intervals up to 1.8 mg/day.

**NURSING IMPLICATIONS**

**Assessment**
- Observe patient taking concurrent insulin for signs and symptoms of hypoglycemia (sweating, hunger, weakness, dizziness, tremor, tachycardia, anxiety).
- If thyroid nodules or elevated serum calcitonin are noted, patient should be referred to an endocrinologist.
- Monitor for pancreatitis (persistent severe abdominal pain, sometimes radiating to the back, with or without vomiting). If pancreatitis is suspected, discontinue liraglutide; if confirmed, do not restart liraglutide.
- **Lab Test Considerations:** Monitor serum HbA1c periodically during therapy to evaluate effectiveness.

**Potential Nursing Diagnoses**
- Imbalanced nutrition: more than body requirements (Indications)
- Noncompliance (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.

**Use Cautiously:**
- History of pancreatitis, History of angiodema to another GLP-1 receptor agonist, Diabetic renal impairment, GW: Use only if potential benefits justify potential risks in gallons.

**Adverse Reactions/Side Effects**

**Contraindications/Precautions**

**Interactions**

**Route/Dosage**

**NURSING IMPLICATIONS**

**Assessment**

**Potential Nursing Diagnoses**

**Implementation**

**Use Cautiously:**

**Adverse Reactions/Side Effects**

**Contraindications/Precautions**

**Interactions**

**Route/Dosage**

**NURSING IMPLICATIONS**

**Assessment**

**Potential Nursing Diagnoses**

**Implementation**
Patient/Family Teaching

- Inform patient of importance of routine follow-up exams.
- Advise patient to carry a form of sugar (sugar packets, candy) and identification describing disease process and medication regimen at all times.
- Instruct patient to notify health care professional of pregnancy or if breast feeding.
- Inform patient of risk of benign and malignant thyroid C-cell tumors. Advise patient to notify health care professional if symptoms of thyroid tumors (lump in neck, hoarseness, trouble swallowing, absence of breath) or if signs of allergic reaction (swelling of face, lips, tongue, or throat; fainting or feeling dizzy; very rapid heartbeat; problems breathing or swallowing; severe rash or itching) occur.
- Advise patient to notify health care professional if nausea is severe, vomiting, or diarrhea occurs.
- Instruct patient to take liraglutide with food to decrease nausea and vomiting.
- Instruct patient to avoid taking new Rx, OTC, vitamins, or herbal products without consulting health care professional.
- Advise patient to notify health care professional if signs of pancreatitis (nausea, vomiting, abdominal pain) occur.
- Advise patient to inform health care professional of medication regimen before treatment or surgery.
- Instruct patient on use of Victoza pen and to take liraglutide as directed. Pen should never be shared between patients, even if needle is changed. Store pen in refrigerator; do not freeze. After initial use, pen may be stored at room temperature or refrigerated up to 30 days. Keep pen cap on when not in use. Do not inject into areas with discoloration, scarring, or inflammation.
- 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 if significant changes occur.
- Advise patient to always carry identification describing disease process and medication regimen at all times.
- Emphasize importance of routine follow-up exams.

Evaluation/Desired Outcomes

- Improved glycemic control.
- Improved hyperglycemia.

Why was this drug prescribed for your patient?