

Insulin Therapy in Type 2 Diabetes

Please note: This algorithm is intended for adults with type 2 diabetes who are initiating and/or optimizing insulin therapy to achieve glycemic targets. It is not intended for people with type 1 diabetes, children with diabetes, women who are, or could become, pregnant or for treatment in the critical care setting (e.g. hyperosmolar hyperglycemic state or diabetic ketoacidosis).

Considerations for Insulin Therapy

Prescribe for patients with:

- Symptomatic severe hyperglycemia (polyuria, polydipsia, and weight loss) or A1C >10%.
- Secondary diabetes from pancreatic insufficiency caused by surgery, chronic pancreatitis, or cystic fibrosis.
- Conditions such as poor wound healing, severe hypertriglyceridemia, steroid use, or intolerance to oral medications for short-term or long-term use.

Consider for patients who are on two or more antidiabetes medications and are unable to maintain or achieve glycemic goals.

- Non-insulin injectable agents such as glucagon-like peptide-1 receptor agonists (GLP-1 RA) or tirzepatide are recommended before advancing to insulin.
- Other antidiabetic agents should be continued when starting insulin therapy except:
 - Sulfonylurea dose should be reduced or medication should be discontinued due to risk of hypoglycemia and weight gain.
 - Pioglitazone should be discontinued due to risk of weight gain, swelling, and heart failure.

Individualize glycemic goals:

- Target A1C <7% or fasting/premeal blood glucose levels 80-130 mg/dL for most patients.
- Aim for time in range (TIR) >70% with continuous glucose monitoring (CGM) target range of 70-180 mg/dL.
- Consider less stringent goals based on age, duration of diabetes, patient preference, comorbidities, hypoglycemia risk, and other factors.

See [DDTP Standard of Care: Glycemic Control](#)

Provide Patient Education

Glucose monitoring:

- Ensure availability of home blood glucose monitoring (BGM) meter and supplies.
- Emphasize the need to perform BGM ≥ 3 times a day when patients advance to multiple daily injections.
- Consider CGM for patients on insulin injections and/or frequent hypoglycemia.

Insulin instruction:

- Ensure adequate insulin and injection supplies (insulin pens are preferred).
- Review appropriate dosing techniques (rotating sites, timing, storage of insulin, disposal of sharps). Consider using the Teach Back method.
- Educate about hypoglycemia and sick-day management.

See [Insulin Therapy in Diabetes Treatment](#) for dosing and prescribing information.

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Step 1: Start basal insulin therapy

- Start long-acting analog 10 units or 0.1-0.2 units/kg once a day (may advance to BID if necessary).
- Increase by 2-4 units or 10-15% every 3-4 days until fasting blood glucose (FBG) values fall within target range, generally 80-130 mg/dL, OR adjust dose following review of CGM profile.

If A1C* not at goal but FBG at target and/or basal insulin dose >0.5 unit/kg/day

If not already on a GLP1-RA or tirzepatide, consider adding to basal insulin or starting long-acting insulin/GLP1-RA combination before adding mealtime insulin.

Step 2: Add mealtime insulin before largest meal

- Start rapid-acting analog 2-4 units or 10% of basal insulin dose before largest meal.
- Increase insulin by 1-2 units or 10-15% until blood glucose (BG) within target range, generally 80-130 mg/dL premeal or <180 mg/dL 1-2 hours after meals, OR utilize CGM profile to guide dose adjustments (individualize).

If A1C* not within target range

Step 3: Add mealtime insulin before other meals

- Start additional rapid-acting analog 2-4 units or 10% of basal insulin dose before other meals (focus on one meal at a time).
- Increase insulin by 1-2 units or 10-15% every 3-7 days until BG falls within target range, generally 80-130 mg/dL premeal or <180 mg/dL 1-2 hours after meals, OR utilize CGM profile to guide dose adjustments (individualize).

* CGM may be used to assess target goals, generally TIR >70% (range 70-180mg/dL) OR glucose management indicator (GMI).

Hypoglycemia

Hypoglycemia is defined as blood glucose level <70 mg/dL with or without symptoms (e.g. diaphoresis, hunger, palpitations, confusion, etc.)

- Identify and address factors that cause hypoglycemia, such as inadequate carbohydrate consumption, exercise, other medications, or excess insulin dose.
- Review blood glucose patterns and if needed, decrease the dose of insulin that is likely causing hypoglycemia by 10-20%.

See DDTP Patient Education Material: [Low Blood Sugar](#) and [Checking Your Blood Sugar](#)

Reference:

American Diabetes Association. 9. Pharmacologic approaches to glycemic treatment: Standards of Care in Diabetes. *Diabetes Care* (Suppl. 1)