

Basal insulin and its impact on daily life: Types, risks and considerations

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Description

Basal insulin replacement is a great aspect of diabetes management, particularly for individuals with type 1 diabetes and those with advanced type 2 diabetes. This therapy aims to maintain stable blood glucose levels throughout the day and night, addressing the body's basal (background) insulin needs. Understanding basal insulin and its role in diabetes care is essential for effective management of the condition.

Basal insulin is a type of long-acting insulin that helps control blood sugar levels in between meals and during periods of fasting, such as overnight. It imitates the natural insulin production of the pancreas, providing a steady level of insulin to regulate glucose metabolism and prevent hyperglycemia (high blood sugar) in the absence of food intake.

■ Basal insulin importance

Stable blood sugar levels: Basal insulin helps maintain stable blood glucose levels throughout the day and night, reducing the risk of both hyperglycemia and hypoglycemia (low blood sugar).

Counteracting hepatic glucose production: The liver continuously produces glucose, particularly during fasting. Basal insulin plays a critical role in suppressing this hepatic glucose production, helping to keep blood sugar levels in check.

Complementing prandial insulin: In individuals who require insulin therapy, basal insulin is often used in conjunction with prandial (mealtime) insulin, which addresses the blood sugar spikes that occur after eating.

■ Types of basal insulin

There are several formulations of basal insulin, each with different onset, peak, and duration profiles:

Insulin glargine (Lantus, Toujeo): Provides a steady insulin release with no pronounced peak, lasting up to 24 h.

Insulin detemir (Levemir): Offers a duration of action of approximately 12 to 24 h, depending on the dose.

Insulin degludec (Tresiba): This formulation has a duration of action exceeding 24 h, allowing for flexibility in dosing.

NPH (Neutral Protamine Hagedorn): While not as commonly used as long-acting insulins, NPH provides basal coverage with a peak effect and can last about 10 to 16 h.

Basal insulin is typically administered via subcutaneous injection, often once or twice daily, depending on the type of insulin and individual needs. Some individuals may use an insulin pump, which delivers a continuous supply of basal insulin throughout the day.

■ Determining basal insulin needs

The appropriate dosage of basal insulin varies for each individual and is influenced by factors such as:

Body weight: Insulin needs may vary based on body weight and composition.

Activity level: Increased physical activity can lower insulin requirements, while decreased activity may raise them.

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Dietary habits: Carbohydrate intake and meal timing can influence basal insulin needs.

Health status: Illness, stress, and hormonal changes can affect insulin sensitivity and requirements.

Regular monitoring of blood glucose levels is essential for individuals on basal insulin. This monitoring helps determine whether adjustments are needed in dosage or timing. A continuous glucose monitor (CGM) can provide real-time data on blood sugar levels, enhancing the ability to fine-tune insulin therapy.

■ Potential risks and considerations

While basal insulin replacement is critical for diabetes management, there are potential risks and considerations.

Hypoglycemia: Overdosing or mismatched timing can lead to low blood sugar levels, which

require prompt treatment.

Weight gain: Some individuals may experience weight gain when starting insulin therapy, highlighting the need for balanced dietary and exercise strategies.

Injection site reactions: Repeated injections may lead to lipodystrophy (changes in fat distribution) or irritation at injection sites.

Basal insulin replacement is a cornerstone of effective diabetes management, providing the necessary background insulin to maintain stable blood sugar levels. By understanding the types of basal insulin, their administration, and the factors that influence insulin needs, individuals with diabetes can work closely with their healthcare providers to optimize their therapy. Regular monitoring and adjustments are essential to achieving the best possible outcomes, ultimately leading to improved health and quality of life.