

INSULIN PEARLS

Rapid-Acting Analogues: Lispro, Aspart and Glulisine

- Convenient administration immediately prior to or after meals
- Fast onset of action
- Limits post-prandial hyperglycemic peaks especially when taken 15-20 minutes prior to meal
- Risk of hypoglycemia if meal delayed >20 minutes after administration
- Short duration of activity (reduces late post-prandial hypoglycemia, but may cause frequent late post-prandial hyperglycemia)

Short-Acting Insulin: Regular

- Slower onset of action; requires administration 20-40 minutes prior to meal; risk of hypoglycemia if meal further delayed
- Possible mismatch with post-prandial hyperglycemic peak (less mismatch if gastroparesis present)
- Long duration of activity; potential for late post-prandial hypoglycemia
- May work better in people with high insulin requirements
- Can be an increase in hypoglycemia risk compared to rapid acting analogue insulin
- Less expensive than rapid acting analogue insulin

Intermediate-Acting Insulins: NPH and Detemir

NPH

- Significant variability in absorption within the same individual and injection site
- Has definite peak that can cause excessive hypoglycemia, especially at night
- Can be an increase in hypoglycemia risk compared to long-acting analogue insulin
- Requires at least two injections if using as basal insulin
- Consider using for people on prednisone, as the action profile matches the prednisone effect well
- Less expensive than long-acting analogue insulin

Detemir

- Duration of action of 6-12 hours for Detemir dose of < 0.4 units/kilogram and duration of action of 20-24 hours for Detemir dose of > 0.4 units/kilogram
- May be dosed 1-2 times per day based on duration of activity
- At lower doses detemir may act more like NPH and at higher doses more like glargine
- Cannot mix with other insulins

Long-Acting Basal Insulins: Glargine and Detemir

Glargine

- Once-daily dosing for most people is adequate
- Some people may have a peak at 10-14 hours and the duration may be < 24 hours, thus to optimize glucose control two injections may be needed
- Less nocturnal hypoglycemia compared to NPH
- Cannot mix with other insulins

Detemir

- Duration of action of 6-12 hours for Detemir dose of < 0.4 units/kilogram and duration of action of 20-24 hours for Detemir dose of \geq 0.4 units/kilogram
- May be dosed 1-2 times per day based on duration of activity
- At lower doses detemir may act more like NPH and at higher doses more like glargine
- Cannot mix with other insulins

Combinations/Pre-Mixed

- See information for rapid-acting analogues, short-acting insulin and intermediate-acting insulin
- Pre-mixed or combinations are used when less complicated regimens are needed

Disclaimer: "Insulin Pearls" provides a collection of expert opinion from health care providers, thus may or may not be evidence-based.