Insulin Types Chart: Onset, Peak and Duration

Rapid, short, intermediate, long, ultra-long and premixed insulins with brand names, meal timing, mixing, hypoglycemia and NCLEX traps

RN Basics
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INSULIN TYPES CHART

This insulin types chart gives the onset, peak and duration of each insulin group with its generic and brand names. Times are approximate and vary with dose, injection site and the person; study values, not a dosing guide. Follow orders and your facility's protocol.

Times from the products' DailyMed labels where the label gives numbers, otherwise from CDC's class table. Sources differ: CDC lists rapid insulin as lasting 2–4 h, regular 3–6 h and NPH onset 2–4 h.

TYPE	GENERIC (BRAND)	ONSET	PEAK	DURATION
Rapid	Lispro (Humalog), aspart (NovoLog), glulisine (Apidra)	About 15 min	1–3 h	3–5 h
Faster rapid	Aspart (Fiasp), lispro-aabc (Lyumjev)	About 15–20 min	About 1.5–3 h	About 5–7 h
Short	Regular (Humulin R)	About 30 min	About 2–3 h	About 8 h (3–14)
Intermediate	NPH, isophane (Humulin N, Novolin N)	About 1–2 h	4–12 h	12–18 h
Long	Glargine U-100 (Lantus)	About 2 h	No pronounced peak	About 24 h
Ultra-long	Degludec (Tresiba), glargine U-300 (Toujeo)	About 6 h	No peak	36 h or longer (degludec at least 42 h)
Premixed	NPH/regular 70/30 (Humulin 70/30); lispro mix 75/25 (Humalog Mix75/25)	30–90 min (70/30)	About 2–3.5 h	Up to about 22–24 h

EXAM TIP Peak time is when hypoglycemia is most likely. NPH given in the morning peaks in the afternoon; rapid insulin peaks within a few hours of the meal it covers.

WHEN TO GIVE IT

INSULIN	TIMING ON THE LABEL
Humalog	Within 15 min before a meal or right after a meal
NovoLog	5–10 min before a meal
Apidra	Within 15 min before or within 20 min after starting a meal
Fiasp, Lyumjev	At the start of a meal or within 20 min after starting
Regular (Humulin R)	About 30 min before a meal
Humulin 70/30	30–45 min before a meal
Humalog Mix75/25	Within 15 min before a meal
Glargine, degludec	Once daily at the same time each day

SAFETY Rapid-acting insulin goes with food. Confirm the meal tray is there (or the client is eating) before giving it; if the client is NPO or the meal is delayed, clarify the order.

MIXING INSULINS: CLEAR BEFORE CLOUDY

- Only NPH is mixed with another insulin in one syringe: regular, lispro, aspart or glulisine.
- Draw the clear insulin (regular or rapid) first, then the cloudy NPH, so NPH never gets into the clear vial. Give the mix right away.
- Never mix glargine, degludec, Lyumjev, U-200 lispro or a premix with anything.
- NPH and premixes are cloudy suspensions: roll and invert each vial or pen about 10 times until evenly white. Glargine is clear; clear does not mean it can be mixed.
- IV: exams expect regular insulin. Humalog U-100, NovoLog and Apidra labels also allow IV use under supervision. Never give NPH, a premix, glargine or degludec IV.

HYPOGLYCEMIA: SIGNS AND THE 15-15 RULE

Signs: shakiness, sweating, fast heartbeat, hunger, anxiety or irritability, confusion, dizziness, headache, blurred vision; seizures if severe. Low is under 70 mg/dL; under 54 is clinically significant.

1. Check the glucose (if you cannot check right away, treat the symptoms).
2. Alert and able to swallow: 15 g of fast carbohydrate, such as 4 oz (½ cup) of juice or regular soda, glucose tablets or one glucose gel packet.
3. Recheck in 15 minutes; repeat the 15 g if still under 70.
4. Once above 70, give a meal, or a snack with protein if the next meal is not soon; insulin still acting can cause another low.
5. Not alert or cannot swallow: nothing by mouth; glucagon, or IV dextrose per protocol, and call for help.

SAFETY Beta-blockers can mask the fast heartbeat of hypoglycemia; sweating and dizziness usually still show. Check the glucose in any client on insulin who becomes confused or sweaty.

NURSING CONSIDERATIONS

- Check the glucose before each dose and know which insulin is peaking when.
- Insulin is a high-alert drug: use an insulin syringe or pen, units only, and follow the facility's double-check policy.
- Rotate sites within one region (abdomen, thigh, upper arm, buttocks) to prevent lipodystrophy and skin amyloid lumps.
- Never share a pen, even with a new needle. Never draw U-300 glargine from a pen into a syringe.
- Insulin moves potassium into cells: watch potassium with IV insulin and in DKA.
- Teach: signs of a low, carrying fast sugar, glucagon at home, and not skipping meals after rapid insulin.

NCLEX TRAPS

- "Which insulin can go IV?" Regular.
- "When is this client most at risk of a low?" At the peak of the insulin given.
- "Draw up regular and NPH." Clear (regular) first, then cloudy (NPH).
- "Mix glargine with lispro to save a stick." Never; glargine is not mixed.
- "Breakfast is delayed; lispro is due." Hold it until the tray arrives, or clarify.
- "Glucose 62, client alert." 15 g fast carbohydrate, recheck in 15 minutes, before calling the provider.

Sources (17) are listed with links at rnbasics.com/sheets/insulin-types-chart.html. For education and exam preparation only. Not medical advice; follow current guidelines and your institution's protocols. RN Basics is an independent study aid not affiliated with any certifying body.