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Comparison of Insulins (United States)

Modified May 2025

This chart compares insulins in regard to onset, duration, and cost. It also provides information on route of administration, stability of in-use products at room temperature, and place in therapy. Other resources pertaining to insulin include our charts, *How to Switch Insulin Products* and *Tips to Improve Insulin Safety*.

--Information in this chart is from US product information[a] unless otherwise specified.--

Interactive Note: Roll over each gray bar containing an insulin type to view its specific footnote. (All footnote content is also provided on page 3.)

Insulin	Usual Frequency/Duration	Select Formulations/Cost[b] (See footnote g for maximum units/injection for pens)	Stability, in-use, room temp[e]
Rapid-acting insulin.[d] Appear clear and colorless.			
Admelog (insulin lispro)	Inject within 15 min before or immediately after a meal. Lasts 3 to 5 hours[2]	• $100/10 mL vial • $40/3 mL SoloStar pen[g] • $190/5 of 3 mL SoloStar pen[g]	Vial, pen: 28 days
Humalog (insulin lispro)	Inject within 15 min before or immediately after a meal. Lasts 3 to 5 hours.[2]	• $70 ($25*)/10 mL vial • $150/5 of 3 mL cartridge ($30 each) • $160*/5 of 3 mL 100 unit/mL KwikPen[g], KwikPen Junior[g] ($30* each), or Tempo[g] • $420/2 of 3 mL KwikPen[g] 200 unit/mL *Authorized generic available for 10 mL vial and 100 unit/mL KwikPen and KwikPen Junior.	Vial, cartridge, pen: 28 days
NovoLog (insulin aspart)	Inject within 5 to 10 min before a meal. Lasts 3 to 5 hours.	• $70/10 mL vial • $130/5 of 3 mL Penfill cartridge • $140/5 of 3 mL FlexPen[g]	Vial,cartridge, pen: 28 days
Merilog (insulin aspart-szjj)	Inject within 5 to 10 min before a meal. Lasts 3 to 5 hours.	• 10 mL vial[f] • 5 of 3 mL Solostar pen[f,g]	Vial, pen: 28 days
Apidra (insulin glulisine)	Inject within 15 min before a meal, or within 20 min after the start of the meal. Lasts 3 to 5 hours.[2]	• $90/10 mL vial • $160/5 of 3 mL SoloStar pen[g]	Vial, pen: 28 days
Fiasp (insulin aspart)	Inject at the start of the meal, or within 20 min after the start of the meal. Lasts 3 to 5 hours.[2]	• $290/10 mL vial • $560/5 of 3 mL FlexTouch pen[g] • $540/5 of 3 mL PenFill cartridge • $290/5 of 1.6 mL PumpCart cartridge	Vial, pen cartridge, pen: 28 days
Lyumjev (insulin lispro-aabc)	Inject within 20 minutes after the start of the meal. Lasts up to 5 hours.[6]	• $270/10 mL vial • $530/5 of 3 mL 100 unit/mL KwikPen[g] ($110 each) • $530/5 of 3 mL 100 unit/mL Tempo pen[g] • $420/2 of 3 mL KwikPen[g] 200 unit/mL ($210 each)	Vial, pen: 28 days
Short-acting (regular) insulin.[d] Appear clear and colorless.			
Humulin R 100 units/mL	Inject about 30 min before the meal. Lasts about 8 hours (longer in obese patients).	$45/10 mL vial	Vial: 31 days
Humulin R 500 units/mL	Inject about 30 min before the meal. Lasts 21 hours (mean).	• $1,500/20 mL vial • $570/2 of 3 mL KwikPen[g] ($290 each)	Vial: 40 days Pen: 28 days
Novolin R	Inject about 30 min before the meal. Lasts about 8 hours.	• $50/10 mL vial • $90/5 of 3 mL FlexPen[g] ($20 each)	Vial: 42 days Pen: 28 days

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Insulin	Usual Frequency/Duration	Select Formulations/Cost[b] (See footnote g for maximum units/injection for pens)	Stability, in-use, room temp[e]
Intermediate-acting (NPH) insulin.[d] Appear cloudy.			
Novolin N	Once or twice daily.[3] Lasts up to 24 hours.[2]	• $50/10 mL vial; $90/5 of 3 mL FlexPen[g] ($20 each)	Vial: 42 days Pen: 28 days
Humulin N	Once or twice daily.[3] Lasts up to 24 hours.[2]	• $45/10 mL vial • $140/5 of 3 mL KwikPen[g]($30 each)	Vial: 31 days Pen: 14 days
Long-acting insulin analogues.[d] Appear clear and colorless.			
Basaglar (insulin glargine)	Once daily at the same time each day. Lasts ~24 hours.	• $330/5 of 3 mL KwikPen[g] ($70 each) or Tempo[g] **Note**: Basaglar is **not** a generic for Lantus.	Pen: 28 days
Lantus (insulin glargine)	Once daily at the same time each day. Median duration 24 hours (range 10.8 to >24 hours; sampling period 24 hours).	• $60/10 mL vial • $100/5 of 3 mL SoloStar pen[g] ($20 each)	Vial, pen: 28 days
Rezvoglar (insulin glargine-aglr)[c]	See *Lantus*.	• $92/5 of 3mL KwikPen[g]	Pen: 28 days
Semglee (insulin glargine-yfgn)[c]	See *Lantus*.	• $270/10 mL vial • $400/5 of 3 mL pen[g]	Vial, pen: 28 days
Toujeo (insulin glargine) (300 units/mL)	Once daily at the same time each day. May take ≥5 days to see maximum effect. Lasts >24 hours.[8]	• $430/3 of 1.5 mL SoloStar pen[g] ($140 each) • $710/5 of 1.5 mL SoloStar pen[g]; $570/2 of 3 mL Max SoloStar pen[g] ($290 each)	Pen: 56 days
Ultra-Long-acting insulin.[d] Appears clear and colorless.			
Tresiba (insulin degludec)	Once daily at any time of day. Lasts at least 42 hours.	• $340 vial (100 units/mL) • $510/5 of 3 mL 100 units/mL FlexTouch pen[g] • $610/3 of 3 mL 200 unit/mL FlexTouch pen[g]	Vial, pen: 56 days
Insulin Mixes.[d] Appear cloudy.			
NovoLog Mix 70/30	Give within 15 min before, or after starting to eat (type 2 diabetes). Lasts up to 24 hours.	• $70/10 mL vial • $140/5 of 3 mL FlexPen[g]	Vial: 28 days Pen: 14 days
Humalog Mix 75/25	Give within 15 min before the meal. Mean duration about 23 hours (range: 18 to 24 hours).	• $90/10 mL vial • $160*/5 of 3 mL KwikPen[g] ($30* each) *Authorized generic available for KwikPen.	Vial: 28 days Pen: 10 days
Humalog Mix 50/50	Give within 15 min before the meal. Lasts at least 22 hours.	• $90/10 mL vial • $160/5 of 3 mL KwikPen[g] ($30 each)	Vial: 28 days Pen: 10 days
Humulin 70/30	Give about 30 to 45 min before the meal. Mean duration about 23 hours (range: 18 to 24 hours).	• $45/10 mL vial • $140/5 of 3 mL KwikPen[g] ($30 each)	Vial: 31 days Pen: 10 days
Novolin 70/30	Give about 30 min before the meal. Lasts up to 24 hours.	• $50/10 mL vial • $90/5 of 3 mL FlexPen[g] ($20 each)	Vial: 42 days Pen: 28 days

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Footnotes

a. Prescribing information used in creation of this chart: Admelog (August 2023), Humalog (August 2023), NovoLog (February 2023), Merilog (February 2025), Apidra (November 2022), Fiasp (June 2023), Lyumjev (October 2022), Humulin R 100 units/mL (June 2023), Humulin R 500 units/mL (February 2024), Novolin R (November 2022), Novolin N (November 2022), Humulin N (March 2023), Basaglar (July 2021), Lantus (June 2023), Rezvoglar (August 2024), Semglee (March 2025), Toujeo (August 2024), Tresiba (July 2022), NovoLog Mix 70/30 (February 2023), Humalog Mix 75/25 (July 2023), Humalog Mix 50/50 (July 2023), Humulin 70/30 (December 2024), Novolin 70/30 (November 2022).

b. Wholesale acquisition cost (WAC), for generic if available. Medication pricing by Elsevier, accessed December 2024. Some products are also available in 3 mL vials (e.g., for institutional use). "Each" means pen or cartridge can be purchased individually.

c. Semglee (insulin glargine-yfgn) and Rezvoglar (insulin glargine-aglr): May substitute for Lantus in many states (interchangeable biosimilar).[5] See our *Facts About Biosimilars*.

d. **Rapid-acting analogues**: prandial human insulin analogues (rDNA origin). Onset 10 to 30 minutes (*Fiasp* and *Lyumjev* are faster. *Fiasp* is formulated with niacinamide and *Lyumjev* is formulated with treprostinil and citrate for faster absorption.)[2,6,7] For type 1 diabetes, recommended at each meal, plus one or two injections of basal insulin each day.[4] For type 2 diabetes, once daily at largest meal plus basal insulin, or basal-bolus regimen (i.e., two or three times daily with meals plus basal insulin).[3] All are given via subcutaneous injection. Humalog 100 unit/mL, Lyumjev, Fiasp, NovoLog, Apidra, and Admelog can be given subcutaneously via insulin pump. Fiasp, Humalog 100 unit/mL, Apidra, NovoLog, Admelog, and Lyumjev 100 unit/mL can be given by intravenous infusion.
Short-acting (regular): regular human insulin of rDNA origin. Available OTC (100 unit/mL only). Onset about 30 minutes (<15 min for the 500 unit/mL concentration). Longer time to onset and longer duration than rapid-acting analogues, but lag time between regular insulin administration and meals may not be needed for all patients with type 2 diabetes.[1] For type 1 diabetes, non-preferred alternative to rapid-acting insulin at each meal, with one or two injections of basal insulin each day.[4] For type 2 diabetes, once daily at largest meal plus basal insulin, or basal-bolus regimen (i.e., two or three times daily with meals plus basal insulin).[3] Can be given subcutaneously, or by intravenous infusion (100 unit/mL concentration only).
Intermediate-acting (NPH): human insulin (rDNA origin) isophane suspension. Available OTC. For type 1 diabetes, may be used as the basal component of basal-prandial regimens (analogues preferred).[4] An initial insulin option in type 2 diabetes, often as an add-on to oral agents.[3] As type 2 diabetes progresses, may be used with mealtime rapid- or short-acting insulin with the largest meal.[3] Onset 90 min.[2] Administered subcutaneously.
Long-acting: human insulin analogue (rDNA origin). For type 1 diabetes, preferred as the basal component of basal-prandial regimens.[4] An initial insulin option in type 2 diabetes, often as an add-on to oral agents.[3] As type 2 diabetes progresses, may be used with mealtime rapid- or short-acting insulin with the largest meal.[3] Administered subcutaneously.
Ultra-Long-acting: human insulin analogue (rDNA origin). Administered via subcutaneous injection. Consider for patients with severe or nocturnal hypoglycemia on another basal analogue, or with hypoglycemia risk factors,[9-11] or adherence problems.
Insulin Mixes: human insulin analogue (rDNA origin) solution and protamine-crystallized human insulin analogue suspension (NovoLog Mix 70/30, Humalog Mix 75/25, Humalog Mix 50/50). Others are human insulin (rDNA origin) solution and human insulin isophane suspension. Humulin 70/30 and Novolin 70/30 available OTC. Generally not appropriate for type 1 diabetes due to lack of dose flexibiltiy.[4] In type 2 diabetes, typically started after failure of basal insulin plus non-insulin.[3] Usually started pre-breakfast and pre-supper.[3] Administered subcutaneously.

e. Additional stability information: **Admelog**: pump reservoir 7 days; IV infusion 4 hours (0.1 to 1 unit/mL in NS); **Apidra**: pump reservoir 48 hours; IV infusion 48 hours (0.05 to 1 unit/mL in NS); **Fiasp**: pump cartridge 4 days; pump reservoir 6 days; IV infusion 24 hours (0.5 to 1 unit/mL in NS or D5W); **Humalog**: pump reservoir (Humalog 100 unit/mL) 7 days; IV infusion 48 hours (0.1 to 1 unit/mL in NS); **NovoLog**: pump reservoir 7 days; IV infusion 24 hours (0.05 to 1 unit/mL in NS, others); diluted 1:1 (U-50) or 1:9 (U-10) with Insulin Diluting Medium for NovoLog 28 days **Lyumjev**: pump reservoir 9 days; IV infusion 12 hours (1 unit/mL in NS or D5W); **Humulin R** 100 units/mL IV infusion: 48 hours (0.1 to 1 unit/mL in NS); **Novolin R**: IV infusion 24 hours (0.05 to 1 unit/mL in NS, D5W, D10 with KCl 40 mEq/L).

f. WAC unavailable at time of writing.

g. Maximum units/injection for pens:
- 30 units/dose: Humalog Junior KwikPen
- 60 units/dose: Humalog KwikPen (U-100, U-200), Humalog Tempo, Humalog Mix 50/50 KwikPen, Humalog Mix 75/25 KwikPen, Humulin N KwikPen, Humulin 70/30 KwikPen, Lyumjev KwikPen (U-100, U-200), Lyumjev Tempo, Novolin N FlexPen, Novolin R FlexPen, Novolin 70/30 FlexPen, Novolog FlexPen, Novolog Mix 70/30 FlexPen
- 80 units/dose: Admelog Solostar, Apidra Solostar, Basaglar KwikPen, Basaglar Tempo, Fiasp FlexTouch, Merilog Solostar, Lantus Solostar, Semglee pen, Toujeo Solostar, Tresiba FlexTouch (U-100)
- 160 units/dose: Tresiba FlexTouch (U-200), Toujeo Max Solostar
- 300 units/dose: Humulin U-500 KwikPen

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