

Comparison of Insulins (United States)

Updated December 2024

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	Stability, in-use, room temp ^e
Rapid-acting insulin.^d Appear clear and colorless.			
<i>Admelog</i> (insulin lispro)	Inject within 15 min before or immediately after a meal. Lasts 3 to 5 hours ²	<ul style="list-style-type: none"> • \$100/10 mL vial • \$40/3 mL <i>SoloStar</i> pen • \$190/5 of 3 mL <i>SoloStar</i> pen 	Vial, pen: 28 days
<i>Humalog</i> (insulin lispro)	Inject within 15 min before or immediately after a meal. Lasts 3 to 5 hours. ²	<ul style="list-style-type: none"> • \$70 (\$25[*])/10 mL vial • \$150/5 of 3 mL cartridge (\$30 each) • \$160[*]/5 of 3 mL 100 unit/mL <i>KwikPen</i>, <i>KwikPen Junior</i> (\$30[*] each), or <i>Tempo</i> • \$420/2 of 3 mL <i>KwikPen</i> 200 unit mL[*] (authorized generic available for 10 mL vial, and 100 unit/mL pens) 	Vial, cartridge, pen: 28 days
<i>NovoLog</i> (insulin aspart)	Inject within 5 to 10 min before a meal. Lasts 3 to 5 hours.	<ul style="list-style-type: none"> • \$70/10 mL vial • \$130/5 of 3 mL <i>Penfill</i> cartridge • \$140/5 of 3 mL <i>FlexPen</i> 	Vial, cartridge, pen: 28 days
<i>Apidra</i> (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	<ul style="list-style-type: none"> • \$90/10 mL vial • \$160/5 of 3 mL <i>SoloStar</i> pen 	Vial, pen: 28 days
<i>Fiasp</i> (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	<ul style="list-style-type: none"> • \$290/10 mL vial • \$560/5 of 3 mL <i>FlexTouch</i> pen • \$540/5 of 3 mL <i>PenFill</i> cartridge • \$290/5 of 1.6 mL <i>PumpCart</i> cartridge 	Vial, pen cartridge, pen: 28 days
<i>Lyumjev</i> (insulin lispro-aabc)	Inject within 20 minutes after the start of the meal. Lasts up to 5 hours. ⁶	<ul style="list-style-type: none"> • \$270/10 mL vial • \$530/5 of 3 mL 100 unit/mL <i>KwikPen</i> (\$110 each) • \$530/5 of 3 mL 100 unit/mL <i>Tempo</i> pen • \$420/2 of 3 mL <i>KwikPen</i> 200 unit/mL (\$210 each) 	Vial, pen: 28 days
Short-acting (regular) insulin.^d Appear clear and colorless.			
<i>Humulin R</i> 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
<i>Humulin R</i> 500 units/mL	Inject about 30 min before the meal. Lasts 21 hours (mean).	<ul style="list-style-type: none"> • \$1,500/20 mL vial • \$570/2 of 3 mL <i>KwikPen</i> (\$290 each) 	Vial: 40 days Pen: 28 days
<i>Novolin R</i>	Inject about 30 min before the meal. Lasts about 8 hours.	<ul style="list-style-type: none"> • \$50/10 mL vial • \$90/5 of 3 mL <i>FlexPen</i> (\$20 each) 	Vial: 42 days Pen: 28 days

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Insulin	Usual Frequency/Duration	Select Formulations/Cost ^b	Stability, in-use, room temp ^e
Intermediate-acting (NPH) insulin.^d Appear cloudy.			
<i>Novolin N</i>	Once or twice daily. ³ Lasts up to 24 hours. ²	\$50/10 mL vial; \$90/5 of 3 mL FlexPen (\$20 each)	Vial: 42 days Pen: 28 days
<i>Humulin N</i>	Once or twice daily. ³ Lasts up to 24 hours. ²	\$45/10 mL vial \$140/5 of 3 mL KwikPen (\$30 each)	Vial: 31 days Pen: 14 days
Long-acting insulin analogues.^d Appear clear and colorless.			
<i>Basaglar</i> (insulin glargine)	Once daily at the same time each day. Lasts ~24 hours.	\$330/5 of 3 mL <i>KwikPen</i> (\$70 each) or <i>Tempo</i> Note: <i>Basaglar</i> is not a generic for <i>Lantus</i> .	Pen: 28 days
<i>Lantus</i> (insulin glargine)	Once daily at the same time each day. Median duration 24 hours (range 10.8 to >24 hours; sampling period 24 hours).	<ul style="list-style-type: none"> \$60/10 mL vial \$100/5 of 3 mL <i>SoloStar</i> pen (\$20 each) 	Vial, pen: 28 days
<i>Semglee</i> (insulin glargine-yfgn) ^e	See <i>Lantus</i> .	<ul style="list-style-type: none"> \$270/10 mL vial \$400/5 of 3 mL pen 	Vial, pen: 28 days
<i>Toujeo</i> (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	<ul style="list-style-type: none"> \$430/3 of 1.5 mL <i>SoloStar</i> pen (\$140 each) \$710/5 of 1.5 mL <i>SoloStar</i> pen; \$570/2 of 3 mL <i>Max SoloStar</i> pen (\$290 each) 	Pen: 56 days
Ultra-Long-acting insulin.^d Appears clear and colorless.			
<i>Tresiba</i> (insulin degludec)	Once daily at any time of day. Lasts at least 42 hours.	<ul style="list-style-type: none"> \$340 vial (100 units/mL) \$510/5 of 3 mL 100 units/mL <i>FlexTouch</i> pen \$610/3 of 3 mL 200 unit/mL <i>FlexTouch</i> pen 	Vial, pen: 56 days
Insulin Mixes.^d Appear cloudy.			
<i>NovoLog Mix 70/30</i>	Give within 15 min before, or after starting to eat (type 2 diabetes). Lasts up to 24 hours.	<ul style="list-style-type: none"> \$70/10 mL vial \$140/5 of 3 mL <i>FlexPen</i> 	Vial: 28 days Pen: 14 days
<i>Humalog Mix 75/25</i>	Give within 15 min before the meal. Mean duration about 23 hours (range: 18 to 24 hours).	<ul style="list-style-type: none"> \$90/10 mL vial \$160*/5 of 3 mL <i>KwikPen</i> (\$30* each) (authorized generic available for 100 unit/mL pens)* 	Vial: 28 days Pen: 10 days
<i>Humalog Mix 50/50</i>	Give within 15 min before the meal. Lasts at least 22 hours.	<ul style="list-style-type: none"> \$90/10 mL vial \$160/5 of 3 mL <i>KwikPen</i> (\$30 each) 	Vial: 28 days Pen: 10 days
<i>Humulin 70/30</i>	Give about 30 to 45 min before the meal. Mean duration about 23 hours (range: 18 to 24 hours).	<ul style="list-style-type: none"> \$45/10 mL vial \$140/5 of 3 mL <i>KwikPen</i> (\$30 each) 	Vial: 31 days Pen: 10 days
<i>Novolin 70/30</i>	Give about 30 min before the meal. Lasts up to 24 hours.	<ul style="list-style-type: none"> \$50/10 mL vial \$90/5 of 3 mL <i>FlexPen</i> (\$20 each) 	Vial: 42 days Pen: 28 days

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Footnotes

- Prescribing information used in creation of this chart: *Admelog* (August 2023), *Humalog* (August 2023), *NovoLog* (February 2023), *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), *Semglee* (November 2023), *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* (January 2024), *Novolin 70/30* (November 2022).
- 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.
- Semglee* (insulin glargine-yfgn): May substitute for *Lantus* in many states (interchangeable biosimilar).⁵ See our [Facts About Biosimilars](#).
- 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 flexibility.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.
- 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).

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