

Comparison of Insulins (United States)

Modified August 2026

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.–

Insulin	Usual Frequency/Duration	Select Formulations/Cost ^b (See footnote g for maximum units/injection for pens)	Stability, in-use, room temp ^a
Rapid-acting insulin.^d Injections 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 KwikPeng 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.	\$70/10 mL vial^f \$130/5 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 peng \$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
Afrezza (inhaled regular insulin [powder]) (for ages ≥6 years)	Administer (inhale) at the beginning of the meal.	\$490/90 cartridges (4 units) \$980/90 cartridges (8 units) \$1,500/90 cartridges (12 units) \$1,500/180 cartridges (4, 8 units [90 of each]) \$2,400/180 cartridges (8, 12 units [90 of each]) \$2,000/180 cartridges (4, 8, 12 units [60 of each])	Opened blister strip (contains three cartridges): 3 days Inhaler: 15 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).	\$570/2 of 3 mL KwikPen^g (\$290 each)	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
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 KwikPeng (\$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 peng (\$20 each)	Vial, pen: 28 days
Rezvoglar (insulin glargine-aglr) ^c	See <i>Lantus</i> .	\$92/5 of 3mL KwikPen^g	Pen: 28 days
Semglee (insulin glargine-yfgn) ^c	See <i>Lantus</i> .	\$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

Comparison of Insulins (United States)

Modified August 2026

Insulin	Usual Frequency/Duration	Select Formulations/Cost ^b (See footnote g for maximum units/injection for pens)	Stability, in-use, room temp ^a
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 pen⁹ \$610/3 of 3 mL 200 unit/mL FlexTouch pen⁹	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 FlexPen⁹	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 KwikPen⁹ (\$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 KwikPen⁹ (\$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 KwikPen⁹ (\$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 FlexPen⁹ (\$20 each)	Vial: 42 days Pen: 28 days
Weekly Insulin.^d Appears clear and colorless.			
Awicli (insulin icodex)	Once weekly	\$99/1 mL 700 units/mL FlexTouch pen⁹	Pen: 12 weeks

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), Afrezza (May 2026), 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 (Afrezza, July 2026). 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:** prandial human insulin analogues (rDNA origin) or inhaled regular insulin (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).^{28,7} 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,^{3,11} 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.

Weekly: human insulin analogue (rDNA origin). Administered via subcutaneous injection. Consider for patients with problems adhering to other basal insulins, patients who are resistant to initiating insulin, and patients who desire less frequent basal insulin injections.¹²

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. Wholesale acquisition cost (WAC). Medication pricing by Elsevier, accessed June 2025.

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
- 700 units/dose: Awicli FlexTouch (U-700)

References:

- Müller N, Frank T, Kloos C, et al. Randomized crossover study to examine the necessity of an injection-to-meal interval in patients with type 2 diabetes and human insulin. *Diabetes Care*. 2013 Jul;36(7):1865-9. doi:10.2337/dc12-1694.
- Clinical Pharmacology powered by Clinical Key. Tampa (FL): Elsevier. 2024. <http://www.clinicalkey.com>. (Accessed December 2, 2024).
- American Diabetes Association Professional Practice Committee. 9. Pharmacologic Approaches to Glycemic Treatment: Standards of Care in Diabetes-2024. *Diabetes Care*. 2024 Jan 1;47(Suppl 1):S158-S178.
- Holt RIG, DeVries JH, Hess-Fischl A, et al. The Management of Type 1 Diabetes in Adults. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care*. 2021 Nov;44(11):2589-2625.
- FDA. FDA approves first interchangeable biosimilar insulin product for treatment of diabetes. July 28, 2021. <https://www.fda.gov/news-events/press-announcements/fda-approves-first-interchangeable-biosimilarinsulin-product-treatment-diabetes>. (Accessed December 2, 2024).
- Linnebjerg H, Zhang Q, LaBell E, et al. Pharmacokinetics and Glucodynamics of Ultra Rapid Lispro (URLI) versus Humalog® (Lispro) in Younger Adults and Elderly Patients with Type 1 Diabetes Mellitus: A Randomized Controlled Trial. *Clin Pharmacokinet*. 2020 Dec;59(12):1589-1599.
- Kildgaard J, Buckley ST, Nielsen RH, et al. Elucidating the Mechanism of Absorption of Fast-Acting Insulin Aspart: The Role of Niacinamide. *Pharm Res*. 2019 Feb 11;36(3):49.
- Becker RH, Nowotny T, Teichert L, et al. Low within- and between-day variability in exposure to new insulin glargine 300 U/mL. *Diabetes Obes Metab*. 2015 Mar;17(3):261-7.
- Marso SP, McGuire DK, Zinman B, et al. Efficacy and Safety of Degludec versus Glargine in Type 2 Diabetes. *N Engl J Med*. 2017 Aug 24;377(8):723-732.
- Lane W, Bailey TS, Gerety G, et al. Effect of Insulin Degludec vs Insulin Glargine U100 on Hypoglycemia in Patients With Type 1 Diabetes: The SWITCH 1 Randomized Clinical Trial. *JAMA*. 2017 Jul 4;318(1):33-44.
- Wysham C, Bhargava A, Chaykin L, et al. Effect of Insulin Degludec vs Insulin Glargine U100 on Hypoglycemia in Patients With Type 2 Diabetes: The SWITCH 2 Randomized Clinical Trial. *JAMA*. 2017 Jul 4;318(1):45-56.
- Rosenstock J, Bain SC, Gowda A, et al. Weekly Icodex versus Daily Glargine U100 in Type 2 Diabetes without Previous Insulin. *N Engl J Med*. 2023 Jul 27;389(4):297-308.

Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication. Copyright © 2026 by Therapeutic Research Center. All Rights Reserved. trchealthcare.com

Clinical Resource, Comparison of Insulins (United States). Pharmacist's Letter/Pharmacy Technician's Letter/Prescriber Insights. January 2025. [410162]. For over 40 years, our editors have distilled primary literature into unbiased, evidence-based recommendations with 0% pharma sponsorship. [Learn more](#)