

STABILITY OF REFRIGERATED DRUGS

February 2015

This chart details the stability of the most commonly dispensed refrigerated drug products, based on the [top 200 prescription medications in 2014 in the United States](#) (by both retail sales and number of prescriptions filled), as well as over the counter insulin products. The chart includes proper storage data, allowable temperature excursions and the length of time such excursions are permitted, as well as contact information for product manufacturers to address questions that may arise on an individual basis. This provides an update for the most common refrigerated medicines dispensed in community pharmacies; practitioners may want to also consult the [2008 Pharmacist's Letter Chart on Stability of Refrigerated and Frozen Drugs](#).

Generic Name (Brand Name)	Formulations	Recommended Storage	Stability at Room Temperature	Manufacturer Contact Information
Adalimumab (<i>Humira</i>)	Prefilled pen Prefilled syringe	Refrigerate at 36° to 46°F (2° to 8° C)	Stable at room temperature up to 77°F (25°C) for 14 days	Abbott Laboratories 800-633-9110
Etanercept (<i>Enbrel</i>)	Sureclick® autoinjector Single use pre-filled syringe Multi-use vial	Refrigerate at 36° to 46°F (2° to 8°C)	Stable at room temperature 68° to 77°F (20° to 25°C) for 14 days	Immunex Corporation 888-436-2735
Influenza Virus Vaccination, types A & B (<i>Afluria, Fluvirin, Fluzone</i>)	Prefilled syringe Multi-use vial	Refrigerate at 36° to 46°F (2° to 8°C)	Stable at room temperature up to 77°F for a maximum of 30 minutes	CSL (<i>Afluria</i>) 888-4FLU-OFF Novartis (<i>Fluvirin</i>) 888-669-6682 Sanofi Pasteur (<i>Fluzone</i>) 800-822-2463
Insulin Lispro (<i>Humalog, Humalog Kwikpen</i>)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	Stable at room temperature 68° to 77°F (20° to 25°C) for 28 days	Eli Lilly 800-545-5979
Insulin Aspart (<i>Novolog, Novolog Kwikpen</i>)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	Stable at room temperature 68° to 77°F (20° to 25°C) for 28 days	Novo Nordisk 800-727-6500

Generic Name (Brand Name)	Formulations	Recommended Storage	Stability at Room Temperature	Manufacturer Contact Information
Insulin Glulisine (Apidra, Apidra Solostar)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	- <u>Vial, Pens</u> : Stable at room temperature up to 77°F (25°C) for 28 days - <u>External pump, infusion bag</u> : Stable at room temperature up to 77°F (25°C) for 48 hours	Sanofi-Aventis US 800-981-2491
Regular Insulin (Humulin R, Novolin R)	Multi-use vial	Unopened vials should be refrigerated at 36° to 46°F (2° to 8°C)	- <u>Humulin R</u> : stable at room temperatures less than 86°F (30°C) for 28 days - <u>Novolin R</u> : stable at room temperatures less than 77°F (25°C) for 42 days	Eli Lilly (Humulin R) 800-545-5979 Novo Nordisk (Novolin R) 800-727-6500
NPH Insulin (Humulin N, Humulin N Kwikpen, Novolin N)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	- <u>Humulin N Vial</u> : stable at room temperatures less than 86°F (30°C) for 28 days - <u>Humulin N Kwikpen</u> : stable at room temperatures 86°F (30°C) for 14 days - <u>Novolin N</u> : stable at room temperatures less than 77°F (25°C) for 42 days	Eli Lilly (Humulin N, Humulin N Kwikpen) 800-545-5979 Novo Nordisk (Novolin N) 800-727-6500
Insulin glargine (Lantus, Lantus Solostar, Toujeo)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	Stable at room temperatures less than 86°F (30°C) for 28 days	Sanofi-Aventis US 800-981-2491
Insulin detemir (Levemir, Levemir Flextouch)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	Stable at room temperatures less than 86°F (30°C) for 42 days	Novo Nordisk 800-727-6500

Generic Name (Brand Name)	Formulations	Recommended Storage	Stability at Room Temperature	Manufacturer Contact Information
30% insulin aspart, 70% insulin aspart protamine (<i>Novolog Mix 70/30, Novolog Mix 70/30 Flexpen</i>)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	- <i>Vial</i> : stable at room temperatures less than 86°F (30°C) for 28 days - <i>Flexpen</i> : stable at room temperatures 86°F (30°C) for 14 days	Novo Nordisk 800-727-6500
25% insulin lispro, 75% insulin lispro protamine (<i>Humalog mix 75/25 vial, Humalog 75/25 Kwikpen</i>)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	-Vial: stable at room temperatures less than 86°F (30°C) for 28 days -Kwikpen: stable at room temperatures 86°F (30°C) for 10 days	Eli Lilly 800-545-5979
70% NPH, 30% Regular (<i>Humulin 70/30 vial, Humulin 70/30 Kwikpen, Novolin 70/30 vial</i>)	Prefilled pen Multi-use vial	Unopened pens or vials should be refrigerated at 36° to 46°F (2° to 8°C)	- <i>Humulin 70/30 Vial</i> : stable at room temperatures less than 86°F (30°C) for 28 days - <i>Humulin 70/30 Kwikpen</i> : stable at room temperatures 86°F (30°C) for 10 days - <i>Novolin 70/30 vial</i> : stable at room temperatures less than 77°F (25°C) for 42 days	Eli Lilly (<i>Humulin 70/30, Humulin 70/30 Kwikpen</i>) 800-545-5979 Novo Nordisk (<i>Novolin 70/30</i>) 800-727-6500
Latanoprost (<i>Xalatan</i>)	Ophthalmic Solution	Prior to dispensing or using, unopened bottles should be refrigerated at 36° to 46°F (2° to 8°C)	Unopened bottles are stable up to 104°F for no more than 8 days. After first use, opened bottles can be stored at room temperature 77°F (25°C) for 42 days	Pfizer (<i>Xalatan</i>) 800-438-1985 <u>Generic Manufacturers of Latanoprost:</u> -Akorn 800-579-8327 -Apotex 877-427-6839 -Bausch & Lomb 800-553-5340 -Greenstone 800-447-3360 -Mylan 800-796-9526 -Sandoz 800-525-8747

Generic Name (Brand Name)	Formulations	Recommended Storage	Stability at Room Temperature	Manufacturer Contact Information
Liraglutide (Victoza)	Prefilled pen	Unopened pens or can be refrigerated at 36° to 46°F (2° to 8°C). Opened pens can be refrigerated 36° to 46°F (2° to 8°C) for 30 days or stored at controlled room temperature between 59 to 86°F (15-30°C) for 30 days	Pens can be stored at a controlled room temperature between 59 to 86°F (15-30°C) for 30 days	Novo Nordisk 800-727-6500
Etonogestrel/ Ethinyl Estradiol Vaginal Ring (Nuvaring)	Vaginal ring	Unopened rings should be refrigerated at 36° to 46°F (2° to 8°C).	Can be stored at room temperature up to 77°F (25°C) for 112 days Excursions are permitted from 59-86°F (15-30°C)	Merck 800-444-2080
Glatiramer Acetate (Copaxone)	Prefilled syringe	Refrigerate at 36° to 46°F (2° to 8°C).	Stable at room temperature of 59-86°F (15-30°C) for 30 days	Teva Neuroscience 888-838-2872
Interferon beta-1-a (Rebif)	Prefilled syringe	Refrigerate at 36° to 46°F (2° to 8°C).	Stable at room temperature below 77°F (25°C)	Pfizer 800-435-1935

Sources:

1. Amgen . Enbrel® (etanercept) Storage Information. Proper Storage of Enbrel. 2015. Available at <http://www.enbrel.com/store-ENBREL.jspx>. Accessed February 23, 2015.
2. AbbVie Corporation. Humira Product Monograph. Part III: Consumer Information. January 17, 2014. Available at http://www.abbvie.ca/content/dam/abbviecorp/ca/english/docs/HUMIRA_PI_EN.pdf. Accessed February 23, 2015.
3. Wyman M J. Cleveland Clinic Pharmacotherapy Update, Department of Pharmacy. Influenza Vaccine 2010-2011 Update. June 2010. Available at https://www.clevelandclinicmeded.com/medicalpubs/pharmacy/pdf/Pharmacotherapy_XIII-3.pdf. Accessed February 23, 2015
4. Kristensen D. PATH Vaccine and Pharmaceutical Technologies Group. Summary of Stability Data for Licensed Vaccines. . November 29, 2012. Available at http://www.path.org/publications/files/TS_vaccine_stability_table.pdf. Accessed February 23, 2015
5. Eli Lilly and Company. Humalog. Highlights of Prescribing Information. November 14, 2013. Available at <http://pi.lilly.com/us/humalog-pen-pi.pdf>. Accessed February 25, 2015
6. Novo Nordisk. Food and Drug Administration New Drug Application. NovoLog® Insulin aspart (rDNA origin) injection. 2006. Available at http://www.fda.gov/ohrms/dockets/ac/06/briefing/2006-4254b_13_04_KP%20InsulinAspartFDALabel102005.pdf. Accessed February 25, 2015
7. Sanofi-Aventis U.S.. Apidra. Prescribing Information. May 2014. Available at <http://products.sanofi.us/apidra/apidra.html>. Accessed February 25, 2015
8. Food and Drug Administration, Division of Drug Information. Emergency Preparedness Information. Information Regarding Insulin Storage and Switching Between Products in an Emergency. July 10, 2013. Available at <http://www.fda.gov/Drugs/EmergencyPreparedness/ucm085213.htm>. Accessed February 25, 2015
9. Eli Lilly and Company. Humulin R®. Information for the Physician. March 9, 2013. Available at <http://pi.lilly.com/us/humulin-r-pi.pdf>. Accessed February 25, 2015

10. Novo Nordisk. Novolin® R. Highlights of Prescribing Information. February 2012. Available at http://www.accessdata.fda.gov/drugsatfda_docs/label/2012/019938s066lbl.pdf. Accessed February 25, 2015
11. Novo Nordisk. Novolin® N. Patient Information for Novolin® N. May 14, 2010. Available at http://www.novonordiskmedicalinformation.com/file_upload/Novolin%20N%20PPI%20.pdf. Accessed February 25, 2015
12. Eli Lilly and Company. Humulin® N KwikPen™. Instructions for Use. November 14, 2013. Available at <http://pi.lilly.com/us/HUMULIN-N-KWIKPEN-IFU.pdf>. Accessed February 25, 2015
13. Eli Lilly and Company. Humulin® N . Highlights of Prescribing Information. November 14, 2013. Available at <http://pi.lilly.com/us/HUMULIN-N-USPI.pdf>. Accessed February 25, 2015
14. Sanofi-Aventis U.S.. Lantus® (insulin glargine). Highlights of Prescribing Information. December 2013. Available at <http://products.sanofi.us/lantus/lantus.html>. Accessed February 25, 2015
15. Novo Nordisk. Levemir®. Highlights of Prescribing Information. January 2015. Available at <http://www.novo-pi.com/levemir.pdf>. Accessed February 25, 2015
16. Novo Nordisk. NovoLog® Mix 70/30. Highlights of Prescribing Information. March 2013. Available at <http://www.novo-pi.com/novologmix7030.pdf>. Accessed February 25, 2015
17. Eli Lilly and Company. HUMALOG® Mix75/25. Product Information. November 14, 2013. Available at <http://pi.lilly.com/us/humalog7525-pi.pdf>. Accessed February 25, 2015
18. Novo Nordisk. Novolin®70/30 . Patient Information. March 9, 2013. Available at http://www.novonordiskmedicalinformation.com/file_upload/Novolin%2070-30%20Patient%20Package%20Insert.%20March%202013.pdf. Accessed February 25, 2015
19. Eli Lilly and Company. HUMULIN®70/30 . Highlights of Prescribing Information. November 14, 2013. Available at <http://pi.lilly.com/us/HUMULIN-7030-USPI.pdf>. Accessed February 25, 2015
20. Pfizer. Xalatan Package Insert for the 2.5mL fill – Package of 1 Bottle. Xalatan® latanoprost ophthalmic solution . August 2011. Available at http://www.accessdata.fda.gov/drugsatfda_docs/label/2012/020597s044lbl.pdf. Accessed February 25, 2015
21. Novo Nordisk. Victoza (liraglutide [rDNA origin]). Highlights of Prescribing Information. January 2010. Available at https://www.accessdata.fda.gov/drugsatfda_docs/label/2010/022341lbl.pdf. Accessed February 25, 2015
22. Merck & Co., Inc. NuvaRing® (etonogestrel/ethinyl estradiol vaginal ring) . Highlights of Prescribing Information.. 2012. Available at http://www.merck.com/product/usa/pi_circulars/n/nuvaring/nuvaring_pi.pdf. Accessed February 25, 2015
23. CVS Health. Insights 2014: Advancing the Science of Pharmacy Care. Top Trend Contributors: Specialty Drugs. 2014. Available at <http://investors.cvshealth.com/~media/Files/C/ CVS-IR/reports/2014-cvs-caremark-insights-report.pdf>. Accessed February 25, 2015
24. Teva Neuroscience Inc. Copaxone (glatiramer acetate injection) for subcutaneous use. Highlights of Prescribing Information. January 2014. Available at <https://www.copaxone.com/Resources/pdfs/PrescribingInformation.pdf>. Accessed February 25, 2015
25. Pfizer. Rebif (interferon beta-1a) . Product Information. May 2003. Available at http://www.accessdata.fda.gov/drugsatfda_docs/label/2003/ifnbser050203LB.pdf. Accessed February 25, 2015
26. Therapeutic Research Center. Pharmacist's Letter. Stability of Refrigerated and Frozen Drugs. October 2008. Available at <http://www.ashp.org/DocLibrary/Policy/PatientSafety/FrozenDrugs.pdf>. Accessed February 25, 2015
27. Therapeutic Research Center. Pharmacist's Letter. Comparison of Insulins. September 2006. Available at <https://samuelmerritt.instructure.com/courses/1181923/files/45371276/download?verifier=5XuTDip0irMH3KdC7b0pkoldgEjJ5uovJOVePcxG&wrap=1>. Accessed February 25, 2015
28. Sanofi-Aventis U.S.. Toujeo® (insulin glargine injection). Highlights of Prescribing Information. 2015. Available at <http://products.sanofi.us/toujeo/toujeo.pdf>. Accessed March 4, 2015