Life doesn’t stop for diabetes. Neither will your patients.
KwikPen® prefilled with the Humalog® Brand of Insulins is an easy-to-use, easy-to-inject prefilled pen.¹

- Small, lightweight, and portable
- Allows your patients to discreetly deliver the Humalog Brand of Insulins
- Does not need refrigeration after first use

(Actual size)

Humalog (insulin lispro injection [rDNA origin]), Humalog Mix75/25 (75% insulin lispro protamine suspension, 25% insulin lispro injection [rDNA origin]), and Humalog Mix50/50 (50% insulin lispro protamine suspension, 50% insulin lispro injection [rDNA origin]) are for use in patients with diabetes mellitus for the control of hyperglycemia. Humalog should be used with longer-acting insulin, except when used in combination with sulfonylureas in patients with type 2 diabetes.

Important Safety Information

Humalog differs from regular human insulin by its rapid onset of action as well as a shorter duration of action. Therefore, when used as a mealtime insulin, Humalog insulins (Humalog, Humalog Mix75/25, and Humalog Mix50/50) should be given within 15 minutes before a meal. Humalog can also be given immediately after a meal. Due to the short duration of action of Humalog, patients with type 1 diabetes also require a longer-acting insulin to maintain glucose control (except when using an insulin pump). Glucose monitoring is recommended for all patients with diabetes.

The safety and effectiveness of Humalog in patients less than 3 years of age have not been established. Safety and effectiveness of Humalog in patients less than 18 years of age have not been established. There are no adequate and well-controlled clinical studies of the use of Humalog insulins in pregnant or nursing women.

Starting or changing insulin therapy should be done cautiously and only under medical supervision.

Patients should be advised not to mix Humalog Mix75/25 or Humalog Mix50/50 with another insulin. Humalog insulins are contraindicated during episodes of hypoglycemia and in patients sensitive to Humalog or one of its excipients.

Hypoglycemia

Hypoglycemia is the most common adverse effect associated with insulins, including Humalog insulins. Hypoglycemia can happen suddenly, and symptoms may be different for each person and may change from time to time. Severe hypoglycemia can cause seizures and may be life-threatening.

Other Side Effects

Other potential side effects associated with the use of insulins include: hypokalemia, weight gain, lipodystrophy, and hypersensitivity. Systemic allergy is less common, but may be life-threatening. Because of the difference in action of Humalog insulins, care should be taken in patients in whom hypoglycemia or hypokalemia may be clinically relevant (eg, those who are fasting, have autonomic neuropathy or renal impairment, are using potassium-lowering drugs, or taking drugs sensitive to serum potassium level).

For additional safety profile and other important prescribing considerations, see the Brief Summary of full Prescribing Information on following pages.

Please see full user manual that accompanies the Pen.

Humalog® is a registered trademark of Eli Lilly and Company. Humalog is available by prescription only. Humalog Mix75/25™ and Humalog Mix50/50™ are trademarks of Eli Lilly and Company. Humalog Mix75/25 and Humalog Mix50/50 are available by prescription only. Humalog KwikPen®, Humalog Mix75/25™ KwikPen®, and Humalog Mix50/50™ KwikPen® are registered trademarks of Eli Lilly and Company. Humalog KwikPen, Humalog Mix75/25 KwikPen, and Humalog Mix50/50 KwikPen are available by prescription only.

* KwikPen Design Validation User Study included adult male and female participants with type 1 and type 2 diabetes. Of the total 150 study participants, 56 were insulin-naïve, 42 were currently administering insulin with a vial and syringe, and 52 were experienced insulin pen users.

Reference


Also Available

Original Prefilled Pens

Humalog®, Humalog Mix75/25™, and Humalog Mix50/50™ are also available by prescription in the original Humalog and Humalog Mixtures Prefilled Pen.

Find out more at www.humalog.com
HUMALOG®
INSLIN LIPSJO INJECTION (rDNA ORIGIN)
HUMALOG® Mix 75/25
75% Insulin Lispro Protamine Suspension
25% Insulin Lispro Protamine Injection (rDNA ORIGIN)
HUMALOG® Mix50/50
50% Insulin Lispro Protamine Suspension
50% Insulin Lispro Protamine Injection (rDNA ORIGIN)
BRIEF SUMMARY: Consult package insert for complete prescribing information.

INICATIONS AND USAGE: Humalog is an insulin analog that is indicated in the treatment of patients with diabetes mellitus for the control of hyperglycemia as an adjunct to diet and exercise. Humalog is indicated for adults and children 6 years of age and older, 25% or more of whose daily insulin requirements may be more rapidly absorbed and thereby provide greater flexibility in the timing of insulin injection and a more rapid onset of action than regular human insulin. Therefore, in patients with type 1 diabetes, Humalog should be used with a long-acting insulin to control the hyperglycemia that occurs between meals. In patients with type 2 diabetes, Humalog may be used without a longer-acting insulin when used in combination therapy with sulfonylureas.

DIABETES MELLITUS: Humalog may be used in an external insulin pump, but should not be diluted or mixed with any other insulin when used in the pump. Humalog administration in insulin pumps has not been studied in patients with type 2 diabetes.

DOSAGE AND ADMINISTRATION: Humalog in insulin lispro protamine suspension and 25% insulin lispro injection (rDNA origin) is indicated in the treatment of patients with diabetes mellitus for the control of hyperglycemia as an adjunct to diet. Humalog, in the presence of more rapidly absorbed insulins such as Humulin® 70/30 while having a similar duration of action. This profile is achieved by combining the rapid onset of Humalog with the intermediate action of insulin lispro protamine suspension.

HUMALOG MIX 75/25: The dose of Humalog Mix75/25 or Humalog Mix50/50 should be given within 15 minutes before or after a meal. Humalog Mix75/25 and Humalog Mix50/50 should be given within 15 minutes before a meal. Patients should carefully read and follow the external insulin pump manufacturer's instructions and the "PATIENT INFORMATION" leaflet before using Humalog Mix75/25 or Humalog Mix50/50.

HUMALOG MIX50/50: The dose of Humalog Mix75/25 or Humalog Mix50/50 should be given within 15 minutes before a meal. Humalog Mix50/50 should not be diluted or mixed with any other insulin. Patients should carefully read and follow the external insulin pump manufacturer's instructions and the "PATIENT INFORMATION" leaflet before using Humalog Mix75/25 or Humalog Mix50/50.

Any change of insulin should be made cautiously and only under medical supervision. Changes in the strength and type of insulin may be associated with a change in the timing of hypoglycemia (eg, regular, NPH, analog), species, or method of manufacture may result in the need for a change in dosage.

PRECAUTIONS: General—Hypoglycemia and hypokalemia are among the potential clinical adverse effects associated with the use of all insulins. Because of differences in the action of Humalog, Humalog Mix75/25, Humalog Mix50/50, and other insulins, care should be taken in patients in whom such potential side effects might be clinically relevant (eg, patients who are fasting, have autonomic neuropathy, or are using potassium-lowering drugs or patients taking drugs sensitive to serum potassium levels. Likewise, patients who are hypokalemic are among other potential clinical adverse effects associated with the use of all insulins.

As with all insulin preparations, the time course of Humalog, Humalog Mix75/25, and Humalog Mix50/50 may vary from individual to individual and is dependent on site of injection, blood supply, temperature, and physical activity. The timing of meals and the amount of exercise can alter their absorption and change their physiological response.

Hypoglycemia—As with all insulin preparations, hypoglycemic reactions may be associated with the administration of Humalog, Humalog Mix75/25, and Humalog Mix50/50. Rapid changes in serum glucose levels can lead to coma in persons with insulin idiosyncrasy, as well as in patients with normal glucose tolerance. An insulin reaction is the result of the rapid absorption of insulin relative to its usual meal plan. Insulin requirements may be altered during illness, emotional disturbances, or other stresses.

Hypersensitivity—As with all insulin preparations, anaphylactic reactions may be associated with the administration of Humalog, Humalog Mix75/25, and Humalog Mix50/50. Reactions caused by the rapid absorption of insulin relative to its usual meal plan. Insulin requirements may be altered during illness, emotional disturbances, or other stresses.

Renal Impairment—The requirements for insulin may be reduced in patients with renal impairment.

Hepatic Impairment—Although impaired hepatic function does not affect the absorption or disposition of Humalog, careful glucose monitoring and dose adjustments of insulin, including Humalog, Humalog Mix75/25, and Humalog Mix50/50, may be necessary.

Allergic Disease—Any insulin therapy may experience redness, swelling, or itching at the site of injection. These minor reactions usually resolve in a few days to a few weeks. In some instances, these reactions may be related to factors other than insulin, such as in a skin cleansing agent or poor diet (eg, bacteriologic irritation).

Systemic Allergy—Less common, but potentially serious, is an allergic reaction to insulin, which is manifested as anaphylaxis in a few affected individuals. The usual symptoms include wheezing, rash, pruritis, urticaria, angioedema, and shock. In rare instances, cardiovascular collapse,本期审校-王立丽 may occur. The relationship of anaphylaxis to a patient's diabetes control is not established. The results have revealed no evidence of impaired fertility or harm to the fetus due to Humalog. There are, however, no adequate and well-controlled studies in pregnant women. The relationship of maternal hypoglycemia to the outcomes of pregnancy was not established. The use of Humalog in pregnant women has not been evaluated. It is known that hypoglycemia during the second and third trimesters. Careful monitoring of the patient is required throughout pregnancy. During the perinatal period, careful monitoring of infants born to mothers with diabetes is warranted. Nutritional Inquiries—It is unknown whether insulin lispro is excreted in significant amounts in human milk. Many drugs, including human insulin, are excreted in human milk. For this reason, caution should be exercised when Humalog, Humalog Mix75/25, or Humalog Mix50/50 is administered to a nursing woman. Patients with diabetes who are lactating may require adjustments in Humalog dose, meal plan, or both.

Pediatric Use—In a Humalog, 9-month, crossover study of propensite children (n=80), aged 3 to 11 years, comparable glycaemic control as measured by AIC was achieved regardless of treatment group:

Clinical studies comparing Humalog with regular human insulin and clinical studies comparing Humalog Mix75/25 and Humalog Mix50/50 with human insulin mixtures did not demonstrate a difference in frequency of hypoglycemia episodes. Differences may be due to small sample size.

Adverse events commonly associated with human insulin therapy include the following:

Body as a Whole—Allergic reactions (see PRECAUTIONS).

Skin and Appendages—Injection site reaction, lipodystrophy, pruritis, rash.

Other—hypo/hyperglycemia (see WARNINGS and PRECAUTIONS).

ADVERSE REACTIONS: Clinical studies comparing Humalog with regular human insulin and clinical studies comparing Humalog Mix75/25 and Humalog Mix50/50 with human insulin mixtures did not demonstrate a difference in frequency of hypoglycemia episodes. Differences may be due to small sample size.

Adverse events commonly associated with human insulin therapy include the following:

Body as a Whole—Allergic reactions (see PRECAUTIONS).

Skin and Appendages—Injection site reaction, lipodystrophy, pruritis, rash.

Other—hypo/hyperglycemia (see WARNINGS and PRECAUTIONS).
OVERDOSAGE: Hypoglycemia may occur as a result of an excess of insulin relative to food intake, energy expenditure, or both. Mid episodes of hypoglycemia are usually treated with intravenous/subcutaneous glucagon or concentrated intravenous glucose. Sustained carbohydrate intake and observation may be necessary because hypoglycemia may recur after apparent clinical recovery.

DOSEAGE AND ADMINISTRATION: Humalog is intended for subcutaneous administration, including use in select external insulin pumps (see DOSEAGE AND ADMINISTRATION, External Insulin Pumps). Doseage regimens of Humalog will vary among patients and should be determined by the healthcare provider familiar with the patient’s metabolic needs, eating habits, and other lifestyle variables. Pharmacokinetic and pharmacodynamic studies showed Humalog to be equipotent to regular human insulin (ie, one unit of Humalog has the same glucose-lowering effect as one unit of regular human insulin), but with more rapid activity. The quicker glucose-lowering effect of Humalog is related to the more rapid absorption rate from subcutaneous tissue. An adjustment of dose or schedule of basal insulin may be needed when a patient changes from other insulins to Humalog, particularly to prevent premeal hyperglycemia.

When used as a mealtime insulin, Humalog should be given within 15 minutes before or immediately after a meal. Regular human insulin is best given 30 to 60 minutes before a meal. To achieve optimal glucose control, the amount of longer-acting insulin being given may need to be adjusted when using Humalog.

The rate of insulin absorption and consequently the onset of activity are known to be affected by the site of injection, exercise, and other variables. Hypoglycemia was absorbed at a consistently faster rate than regular human insulin in healthy male volunteers given 0.2 U/kg regular human insulin or Humalog at abdominal, deltoid, or femoral sites, the 3 sites often used by patients with diabetes. When not mixed in the same vial with other insulins, Humalog maintains its rapid onset of action and has less variability in its onset of action among injection sites compared with regular human insulin (see PRECAUTIONS). After abdominal administration, Humalog concentrations are higher than those following deltoid or thigh injections. Also, the duration of action of Humalog is slightly shorter following abdominal injection, compared with deltoid and femoral injections. As with all insulin preparations, the time course of action of Humalog may vary considerably in different individuals or within the same individual. Patients must be educated to use proper injection techniques.

Humalog in a vial may be diluted with STERILE DILUENT for Humalog, Humulin N, Humulin R, Humulin R-R 50/50 to a concentration of 1:10 equivalent to U-100 or 1:2 (equivalent to U-50). Diluted Humalog may remain in patient use for 28 days when stored at 5°C (41°F) and for 14 days when stored at 30°C (86°F). Do not dilute Humalog contained in a cartridge or Humalog used in an external insulin pump.

Parenteral drug products should be inspected visually before use whenever the solution and the container permit. If the solution is cloudy, contains particulate matter, is thickened, or is discolored, the contents must not be injected. Humalog should not be used after its expiration date. The cartridge containing Humalog is not designed to allow any other insulin to be mixed in the cartridge or for the cartridge to be refilled with insulin.

External Insulin Pumps—Humalog was tested in MiniMed Models 500, 507, and 508 insulin pumps using MiniMed Polyform infusion sets. Humalog was tested in the Di setronic H-TRONpump U100 insulin pump (with plastic 3.15 mL insulin reservoir) and the Di setronic D-TRONplus™ and D-TRONT™ pumps (with Humalog 3 mL cartridges) using Di setronic Rapid® infusion sets. Humalog should not be diluted or mixed with any other insulin when used in an external insulin pump.

Humalog Mix75/25 and Humalog Mix50/50—Humalog Mix75/25 and Humalog Mix50/50 are intended only for subcutaneous administration and should not be administered intravenously. Doseage regimens of Humalog Mix75/25 and Humalog Mix50/50 will vary among patients and should be determined by the healthcare provider familiar with the patient’s metabolic needs, eating habits, and other lifestyle variables. Humalog Mix75/25 has been shown to be equipotent to regular human insulin on a molar basis. One unit of Humalog has the same glucose-lowering effect as one unit of regular human insulin, but its effect is more rapid and of shorter duration. Humalog Mix75/25—Humalog Mix75/25 has a similar glucose-lowering effect as compared with Humulin 70/30 on a unit-for-unit basis. The quicker glucose-lowering effect of Humalog is related to the more rapid absorption rate of insulin lispro from subcutaneous tissue. Humalog Mix75/25 starts lowering blood glucose more quickly than regular human insulin, allowing for convenient dosing immediately before a meal (within 15 minutes). In contrast, mixtures containing regular human insulin should be given 30 to 60 minutes before a meal.

Humalog Mix50/50—Direct comparison between Humalog Mix50/50 and Humulin 50/50 was not performed. However, a cross-study comparison suggests that Humalog Mix50/50 has a duration of activity that is similar to Humulin 50/50.

The rate of insulin absorption and consequently the onset of activity are known to be affected by the site of injection, exercise, and other variables. As with all insulin preparations, the time course of action of Humalog Mix75/25 and Humalog Mix50/50 may vary considerably in different individuals or within the same individual. Patients must be educated to use proper injection techniques.

Humalog Mix75/25 and Humalog Mix50/50 should be inspected visually before use.

Humalog Mix75/25 and Humalog Mix50/50 should be used only if it appears uniformly cloudy after mixing. Humalog Mix75/25 and Humalog Mix50/50 should not be used after its expiration date.

HOW SUPPLIED: Humalog (insulin lispro injection, USP [rDNA origin]) is available in the following package sizes (with each presentation containing 100 units insulin lispro per mL [U-100]):

- 10 mL vials
  - 5 x 3 mL cartridges
    - NDC 0002-7510-01 (VL-7510)
  - 5 x 3 mL disposable insulin delivery devices (Pen)
    - NDC 0002-8775-59 (HP-8775)
    - NDC 0002-8797-59 (HP-8797)

Humalog Mix75/25 (75% insulin lispro protamine suspension and 25% insulin lispro injection [rDNA origin]) is available in the following package sizes (with each presentation containing 100 units insulin lispro per mL [U-100]):

- 10 mL vials
  - 5 x 3 mL disposable insulin delivery devices (Pen)
    - NDC 0002-7511-01 (VL-7511)
  - 5 x 3 mL disposable insulin delivery devices (KwikPen®)
    - NDC 0002-8794-59 (HP-8794)

Humalog Mix50/50 (50% insulin lispro protamine suspension and 50% insulin lispro injection [rDNA origin]) is available in the following package sizes (with each presentation containing 100 units insulin lispro per mL [U-100]):

- 10 mL vials
  - 5 x 3 mL disposable insulin delivery devices (Pen)
    - NDC 0002-7512-01 (VL-7512)
  - 5 x 3 mL disposable insulin delivery devices (KwikPen®)
    - NDC 0002-8798-59 (HP-8798)

Unrefrigerated (below 30°C [86°F]) Pens and KwikPens must be used within 10 days or be discarded, even if they still contain Humalog Mix75/25 or Humalog Mix50/50. Protect from direct heat and light.

Use in an External Insulin Pump—A Humalog 3 mL cartridge used in the D-TRON® or D-TRONplus® cartridge adapters, and Humalog in the external insulin pump reservoir should be discarded every 48 hours or less.

Literature revised January 08, 2008

KwikPens manufactured by Eli Lilly and Company, Indianapolis, IN 46225, USA. Pens manufactured by Eli Lilly and Company, Indianapolis, IN 46225, USA or Lilly France, Puteaux, France.

Vials manufactured by Eli Lilly and Company, Indianapolis, IN 46225, USA or Hospira, Inc., Lake Forest, IL 60045, USA or Lilly France, F-67840 Fegersheim, France.

Infusion sets, insulin pumps using MiniMed D-TRON, D-TRONplus, Models 506, 507, and 508 insulin pumps using MiniMed Polyform infusion sets. Humalog should not be diluted or mixed with any other insulin when used in an external insulin pump.

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Storage—Unopened Humalog should be stored in a refrigerator (2° to 8°C [36° to 46°F]), but not in the freezer. Do not use Humalog if it has been frozen. Unreﬁgerated (below 30°C [86°F]) vials must be used within 28 days or be discarded, even if they still contain Humalog. Protect from direct heat and light. Humalog Mix75/25 and Humalog Mix50/50 should be stored in a refrigerator (2° to 8°C [36° to 46°F]), but not in the freezer. Do not use Humalog Mix75/25 or Humalog Mix50/50 if it has been frozen. Unreﬁgerated (below 30°C [86°F]) vials must be used within 28 days or be discarded, even if they still contain Humalog Mix75/25 or Humalog Mix50/50.

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