PA 9087 FSAMP

INFORMATION FOR THE PATIENT
CARTRIDGE

HUMALOG®
INSULIN LISPRO INJECTION
(rDNA ORIGIN)
100 UNITS PER ML (U-100)

3 ML CARTRIDGE
For use in Owen Mumford, Ltd.'s Autopen®[1] 3 mL insulin delivery device (reusable insulin Pen), Disetronic®[2] D-TRON®[2] or D-TRON®[2]plus insulin pumps.

WARNINGS

THIS LILLY HUMAN INSULIN ANALOG IS DIFFERENT FROM OTHER INSULINS BECAUSE IT HAS A RAPID ONSET AND SHORTER DURATION OF ACTION. THE RAPID ONSET OF ACTION MEANS THAT YOU SHOULD TAKE YOUR DOSE OF HUMALOG® (INSULIN LISPRO INJECTION, rDNA ORIGIN) WITHIN 15 MINUTES BEFORE OR IMMEDIATELY AFTER EATING. THE SHORT DURATION OF ACTION OF HUMALOG MEANS THAT IF YOU HAVE TYPE 1 DIABETES, YOU ALSO NEED TO USE A LONGER-ACTING INSULIN TO GIVE THE BEST GLUCOSE CONTROL (EXCEPT WHEN USING AN EXTERNAL INSULIN PUMP). IF YOU HAVE TYPE 2 DIABETES, HUMALOG MAY BE USED WITHOUT A LONGER-ACTING INSULIN WHEN USED IN COMBINATION THERAPY WITH SULFONYLUREA AGENTS.

ANY CHANGE OF INSULIN SHOULD BE MADE CAUTIOUSLY AND ONLY UNDER MEDICAL SUPERVISION. CHANGES IN STRENGTH, MANUFACTURER, TYPE (E.G., REGULAR, NPH, LENTE), SPECIES (BEEF, PORK, BEEF-PORK, HUMAN), OR METHOD OF MANUFACTURE (rDNA VERSUS ANIMAL-SOURCE INSULIN) MAY RESULT IN THE NEED FOR A CHANGE IN THE TIMING OR DOSAGE OF HUMALOG OR THE LONGER-ACTING INSULIN, OR BOTH.

PATIENTS TAKING HUMALOG MAY REQUIRE A CHANGE IN DOSAGE FROM THAT USED WITH OTHER INSULINS. IF AN ADJUSTMENT IS NEEDED, IT MAY OCCUR WITH THE FIRST DOSE OR DURING THE FIRST SEVERAL WEEKS OR MONTHS.

USE IN REUSABLE INSULIN PEN: TO OBTAIN AN ACCURATE DOSE, CAREFULLY READ AND FOLLOW THE INSULIN DELIVERY DEVICE MANUFACTURER'S INSTRUCTIONS AND THIS "INFORMATION FOR THE PATIENT" INSERT BEFORE USING THIS PRODUCT IN AN INSULIN PEN (*see* INSTRUCTIONS FOR USE section).

USE IN AN EXTERNAL INSULIN PUMP: CAREFULLY READ AND FOLLOW THE EXTERNAL INSULIN PUMP MANUFACTURER'S INSTRUCTIONS AND THIS "INFORMATION FOR THE PATIENT" INSERT BEFORE USING THIS PRODUCT IN AN EXTERNAL INSULIN PUMP (*see* INSTRUCTIONS FOR USE section).

DIABETES

Insulin is a hormone produced by the pancreas, a large gland that lies near the stomach. This hormone is necessary for the body's correct use of food, especially sugar. Diabetes occurs when the pancreas does not make enough insulin to meet your body's needs.

To control your diabetes, your doctor has prescribed injections of insulin products to keep your blood glucose at a near-normal level. You have been instructed to test your blood and/or your urine regularly for glucose. Studies have shown that some chronic complications of diabetes such as eye disease, kidney disease, and nerve disease can be significantly reduced if the blood sugar is maintained as close to normal as possible. The American Diabetes Association recommends that if your pre-meal glucose levels are consistently above 130 mg/dL or your hemoglobin A_{1c} (HbA_{1c}) is more than 7%, consult your doctor. A change in your diabetes therapy may be needed. If your blood tests consistently show below-normal glucose levels, you should also let your doctor know. Proper control of your diabetes requires close and constant cooperation with your doctor. Despite diabetes, you can lead an active and healthy life if you eat a balanced diet, exercise regularly, and take your insulin injections as prescribed.

Always keep an extra supply of Humalog as well as a spare syringe and needle on hand. Always wear diabetic identification so that appropriate treatment can be given if complications occur away from home.

HUMALOG

Description

Humalog (insulin lispro [rDNA origin]) is made by a special non-disease-producing laboratory strain of *Escherichia coli* bacteria that has been genetically altered by the addition of the gene for this human insulin analog. Humalog consists of zinc-insulin lispro crystals dissolved in a clear fluid. Humalog is a sterile solution and is for subcutaneous injection. It should not be used intramuscularly. The concentration of Humalog is 100 units/mL (U-100). Humalog starts lowering blood glucose more quickly and has a shorter duration of action compared to regular human insulin. This means that your dose of Humalog should be given within 15 minutes before or immediately after a meal (regular insulin works best when given 30 to 60 minutes before a meal). The short duration of action of Humalog means that if you have type 1 diabetes, you need to use a longer-acting insulin to give the best glucose control (except when using an external insulin pump). If you have type 2 diabetes, Humalog may be used without a longer-acting insulin when used in combination therapy with sulfonylurea agents. The time course of Humalog action, like that of other insulins, may vary in different individuals or at different times in the same individual, based on dose, site of injection, blood supply, temperature, and physical activity.

Identification

Cartridges of insulin lispro injection (rDNA origin), by Eli Lilly and Company, have the trademark Humalog. Your doctor has prescribed the type of insulin that he/she believes is best for you.

DO NOT USE ANY OTHER INSULIN EXCEPT ON YOUR DOCTOR'S ADVICE AND DIRECTION.

Cartridges of Humalog 3 mL are available in boxes of 5.

3 mL Cartridge

Humalog® 3 mL cartridges are for use in Owen Mumford, Ltd.'s Autopen®[1] 3 mL insulin delivery device (reusable insulin Pen) and in Disetronic D-TRON®[2] or D-TRON®[2]plus insulin pumps using Disetronic Rapid®[2] infusion sets.

The cartridge containing Humalog is not designed to allow any other insulin to be mixed in the cartridge or for the cartridge to be reused.

Always examine the appearance of Humalog solution in a cartridge before administering a dose. When using a Humalog cartridge in an external insulin pump, inspect the cartridge before inserting it in the external insulin pump and periodically during use. Humalog is a clear and colorless liquid with a water-like appearance and consistency. Do not use if it appears cloudy,

thickened, or slightly colored, or if solid particles are visible. If you note anything unusual in its appearance or notice your insulin requirements changing markedly, consult your doctor.

Storage

When used in Reusable Insulin Pen

Not in-use (unopened): Unopened Humalog cartridges should be stored in a refrigerator but not in the freezer. Do not use a Humalog cartridge if it has been frozen.

In-use: Humalog cartridges in-use should **NOT** be refrigerated but should be kept at room temperature (below 86°F [30°C]) away from direct heat and light. Humalog cartridge that you are using must be discarded **28 days after the first use.**

Do not use Humalog after the expiration date stamped on the label.

When used in an External Insulin Pump

Infusion sets (tubing and catheters) and D-TRON®^{2} or D-TRON®^{2}plus cartridge adapter should be discarded every 48 hours or less. Humalog in an external insulin pump should not be exposed to temperatures above 98.6°F (37°C) such as in sauna or hot tub, hot showers, direct sunlight, or radiant heater. A Humalog 3 mL cartridge used in the D-TRON®^{2} or D-TRON®^{2}plus pump should be discarded after 7 days, even if it still contains Humalog.

INSTRUCTIONS FOR USE

Reusable insulin Pens and external insulin pumps differ in their operation. It is important to read, understand, and follow the instructions for use of the reusable insulin Pen or external insulin pump you are using.

NEVER SHARE INSULIN PENS, EXTERNAL INSULIN PUMPS, INFUSION SETS, CARTRIDGES, OR NEEDLES.

PREPARING FOR AN INJECTION USING REUSABLE INSULIN PEN OR EXTERNAL INSULIN PUMP

1. Inspect the appearance of Humalog solution before you insert the cartridge into the reusable insulin Pen or external insulin pump. Humalog should look clear and colorless. Do not use Humalog if it appears cloudy, thickened, slightly colored, or if solid particles are visible. Once the cartridge is in use, inspect the insulin in the insulin Pen before each injection. When using a Humalog cartridge in an external insulin pump, inspect the cartridge before inserting it in the external insulin pump and periodically during use.
2. *Use in Reusable Insulin Pen* — Follow the reusable insulin Pen manufacturer's instructions carefully for loading the cartridge into the insulin Pen and for use of the insulin Pen.
   a. Use an alcohol swab to wipe the exposed rubber surface on the metal cap end of the cartridge.
   b. Follow the insulin needle manufacturer's instructions for attaching and changing the needle.
3. *Use in an External Insulin Pump* — Follow the external insulin pump manufacturer's instructions carefully for use of Humalog 3 mL cartridges in the D-TRON®^{2} or D-TRON®^{2}plus insulin pump.

GENERAL INSTRUCTIONS

For use in Reusable Insulin Pen

1. Wash your hands.
2. To avoid tissue damage, choose a site for each injection that is at least 1/2 inch from the previous injection site. The usual sites of injection are abdomen, thighs, and arms.
3. Cleanse the skin with alcohol where the injection is to be made.
4. With one hand, stabilize the skin by spreading it or pinching up a large area.
5. Inject the dose as instructed by your doctor. Hold the needle under the skin for at least 5 seconds after injecting.

6. After injecting a dose, pull the needle out and apply gentle pressure over the injection site for several seconds. **Do not rub the area.**
7. Immediately after an injection, remove the needle from the insulin Pen. Doing so will guard against contamination, and prevent leakage of Humalog, reentry of air, and needle clogs. **Do not reuse needles.** Place the used needle in a puncture-resistant disposable container and properly dispose of it as directed by your Health Care Professional.
8. *3 mL cartridge* — Use the gauge on the side of the cartridge to help you judge how much insulin remains. The distance between each mark on the 3 mL cartridge is about 20 units.

For use in an External Insulin Pump

Your doctor should train you on intensive insulin therapy including sterile techniques. You should also be trained on the use of your external insulin pump and pump accessories.

You should replace the infusion set (tubing and catheter) and D-TRON®^{2} or D-TRON®^{2}plus cartridge adapter every 48 hours or less. You should also choose a new infusion site every 48 hours or less. A Humalog 3 mL cartridge used in the pump should be discarded after 7 days, even if it still contains Humalog. Contact your doctor if your infusion sites are red, itching, or thickened, and then choose a new infusion site.

Follow the external insulin pump manufacturer's instructions carefully for use of Humalog 3 mL cartridges in Disetronic D-TRON®^{2} or D-TRON®^{2}plus insulin pump.

DOSAGE

Your doctor has told you which insulin to use, how much, and when and how often to inject it. Because each patient's case of diabetes is different, this schedule has been individualized for you. Your usual Humalog dose may be affected by changes in your food, activity, or work schedule. Carefully follow your doctor's instructions to allow for these changes. Other things that may affect your Humalog dose are:

Illness

Illness, especially with nausea and vomiting, may cause your insulin requirements to change. Even if you are not eating, you will still require insulin. You and your doctor should establish a sick day plan for you to use in case of illness. When you are sick, test your blood glucose/urine glucose and ketones frequently and call your doctor as instructed.

Pregnancy

Good control of diabetes is especially important for you and your unborn baby. Pregnancy may make managing your diabetes more difficult. If you are planning to have a baby, are pregnant, or are nursing a baby, consult your doctor. Humalog has not been tested in pregnant or nursing women.

Geriatric Use

Elderly patients using Humalog had HbA_{1c} values and hypoglycemia rates similar to those observed in younger patients. The onset of action of Humalog may be different in elderly patients.

Medication

Insulin requirements may be increased if you are taking other drugs with hyperglycemic activity, such as oral contraceptives, corticosteroids, or thyroid replacement therapy. Insulin requirements may be reduced in the presence of drugs with blood-glucose-lowering activity, such as oral antidiabetic agents, salicylates (for example, aspirin), sulfa antibiotics, alcohol, and certain antidepressants. Your Health Care Professional is aware of other medications that may affect your diabetes control. Therefore, always discuss any medications you are taking with your doctor.

Exercise

Exercise may lower your body's need for insulin products during and for some time after the physical activity. Exercise may also speed up the effect of a dose of Humalog, especially if the exercise involves the area of injection site. Discuss with your doctor how you should adjust your regimen to accommodate exercise.

Travel

Persons traveling across more than 2 time zones should consult their doctor concerning adjustments in their insulin schedule.

COMMON PROBLEMS OF DIABETES

Hypoglycemia (Low Blood Sugar)

Hypoglycemia (too little glucose in the blood) is one of the most frequent adverse events experienced by insulin users. It can be brought about by:

1. **Missing or delaying meals.**
2. Taking too much insulin.
3. Exercising or working more than usual.
4. An infection or illness (especially with diarrhea or vomiting).
5. A change in the body's need for insulin.
6. Diseases of the adrenal, pituitary, or thyroid gland, or progression of kidney or liver disease.
7. Interactions with other drugs that lower blood glucose, such as oral antidiabetic agents, salicylates (for example, aspirin), sulfa antibiotics, and certain antidepressants.
8. Consumption of alcoholic beverages.

Symptoms of mild to moderate hypoglycemia may occur suddenly and can include:

- sweating
- dizziness
- palpitation
- tremor
- hunger
- restlessness
- tingling in the hands, feet, lips, or tongue
- lightheadedness
- inability to concentrate
- headache
- drowsiness
- sleep disturbances
- anxiety
- blurred vision
- slurred speech
- depressed mood
- irritability
- abnormal behavior
- unsteady movement
- personality changes

Signs of severe hypoglycemia can include:

- disorientation
- unconsciousness
- seizures
- death

Therefore, it is important that assistance be obtained immediately.

Early warning symptoms of hypoglycemia may be different or less pronounced under certain conditions, such as long duration of diabetes, diabetic nerve disease, use of medications such as beta-blockers, changing insulin preparations, or intensified control (3 or more injections per day) of diabetes. A few patients who have experienced hypoglycemic reactions after transfer from animal-source insulin to human insulin have reported that the early warning symptoms of hypoglycemia were less pronounced or different from those experienced with their previous insulin.

Without recognition of early warning symptoms, you may not be able to take steps to avoid more serious hypoglycemia. Be alert for all of the various types of symptoms that may indicate hypoglycemia. Patients who experience hypoglycemia without early warning symptoms should monitor their blood glucose frequently, especially prior to activities such as driving. If the blood glucose is below your normal fasting glucose, you should consider eating or drinking sugar-containing foods to treat your hypoglycemia.

Mild to moderate hypoglycemia may be treated by eating foods or drinks that contain sugar. Patients should always carry a quick source of sugar, such as candy mints or glucose tablets. More severe hypoglycemia may require the assistance of another person. Patients who are unable to take sugar orally or who are unconscious require an injection of glucagon or should be treated with intravenous administration of glucose at a medical facility.

You should learn to recognize your own symptoms of hypoglycemia. If you are uncertain about these symptoms, you should monitor your blood glucose frequently to help you learn to recognize the symptoms that you experience with hypoglycemia.

If you have frequent episodes of hypoglycemia or experience difficulty in recognizing the symptoms, you should consult your doctor to discuss possible changes in therapy, meal plans, and/or exercise programs to help you avoid hypoglycemia.

Hyperglycemia and Diabetic Ketoacidosis (DKA)

Hyperglycemia (too much glucose in the blood) may develop if your body has too little insulin. Hyperglycemia can be brought about by any of the following:

1. Omitting your insulin or taking less than the doctor has prescribed.
2. Eating significantly more than your meal plan suggests.
3. Developing a fever, infection, or other significant stressful situation.

In patients with type 1 or insulin-dependent diabetes, prolonged hyperglycemia can result in DKA. The first symptoms of DKA usually come on gradually, over a period of hours or days, and include a drowsy feeling, flushed face, thirst, loss of appetite, and fruity odor on the breath. With DKA, urine tests show large amounts of glucose and ketones. Heavy breathing and a rapid pulse are more severe symptoms. If uncorrected, prolonged hyperglycemia or DKA can lead to nausea, vomiting, stomach pains, dehydration, loss of consciousness, or death. Therefore, it is important that you obtain medical assistance immediately.

Lipodystrophy

Rarely, administration of insulin subcutaneously can result in lipoatrophy (depression in the skin) or lipohypertrophy (enlargement or thickening of tissue). If you notice either of these conditions, consult your doctor. A change in your injection technique may help alleviate the problem.

Allergy

Local Allergy — Patients occasionally experience redness, swelling, and itching at the site of injection of insulin. This condition, called local allergy, usually clears up in a few days to a few weeks. In some instances, this condition may be related to factors other than insulin, such as irritants in the skin cleansing agent or poor injection technique. If you have local reactions, contact your doctor.

Systemic Allergy — Less common, but potentially more serious, is generalized allergy to insulin, which may cause rash over the whole body, shortness of breath, wheezing, reduction in blood pressure, fast pulse, or sweating. Severe cases of generalized allergy may be life threatening. If you think you are having a generalized allergic reaction to insulin, notify a doctor immediately.

ADDITIONAL INFORMATION

Additional information about diabetes may be obtained from your diabetes educator.

DIABETES FORECAST is a magazine designed especially for people with diabetes and their families. It is available by subscription from the American Diabetes Association (ADA), P.O. Box 363, Mt. Morris, IL 61054-0363, 1-800-DIABETES (1-800-342-2383).

Another publication, **COUNTDOWN**, is available from the Juvenile Diabetes Research Foundation International (JDRFI), 120 Wall Street 19th Floor, New York, NY 10005, 1-800-533-CURE (1-800-533-2873).

Additional information about Humalog can be obtained by calling The Lilly Answers Center at 1-800-LillyRx (1-800-545-5979).

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