ADMELOG® (insulin lispro injection), for subcutaneous or intravenous use

Initial U.S. Approval: 1996

INDICATIONS AND USAGE
ADMELOG is a rapid-acting human insulin analog indicated to improve glycemic control in adults and pediatric patients 3 years and older with type 1 diabetes mellitus and adults with type 2 diabetes mellitus. (1)

DOSEAGE AND ADMINISTRATION
- See Full Prescribing Information for important administration instructions. (2.1, 2.2, 2.3, 2.4)
- Rotate injection sites to reduce risk of lipodystrophy and localized cutaneous amyloidosis. (2.2)
- Subcutaneous injection (2.2):
  - Administer ADMELOG by subcutaneous injection in the abdominal wall, thigh, upper arm, or buttocks within 15 minutes before a meal or immediately after a meal.
  - Rotate injection sites to reduce risk of lipodystrophy and localized cutaneous amyloidosis.
- Continuous subcutaneous infusion (Insulin Pump) (2.2):
  - Administer ADMELOG by continuous subcutaneous infusion using an insulin pump in a region recommended in the instructions from the pump manufacturer.
  - Rotate infusion sites to reduce risk of lipodystrophy and localized cutaneous amyloidosis.
- Intravenous infusion: Administer ADMELOG by intravenous infusion only after dilution and under medical supervision. (2.2)
- The dosage of ADMELOG must be individualized based on the route of administration and the individual's metabolic needs, blood glucose monitoring results and glycemic control goal. (2.3)

DOSEAGE FORMS AND STRENGTHS
Injection: 100 units/mL (U-100) is available as:
- 3 mL multiple-dose vials
- 10 mL multiple-dose vials
- 3 mL single-patient-use SoloStar® prefilled pens

CONTRAINDICATIONS
- Do not use during episodes of hypoglycemia. (4)
- Do not use in patients with hypersensitivity to insulin lispro or any of the excipients. (4)

WARNINGS AND PRECAUTIONS
- Never share an ADMELOG SoloStar disposable prefilled pen or syringe between patients, even if the needle is changed. (5.1)
2.2 Route of Administration
ADMELOG administered by subcutaneous injection should generally be used in regimens with intermediate or long-acting insulin.
ADMELOG should be administered by subcutaneous injection in the abdominal wall, thigh, upper arm, or buttocks. Rotate injection site within the same region (abdomen, thigh, upper arm, or buttocks) from one injection to the next to reduce the risk of lipodystrophy and localized cutaneous amyloidosis. Do not inject into areas of lipodystrophy or localized cutaneous amyloidosis [see Warnings and Precautions (5.2), Adverse Reactions (6)].

During changes to a patient’s insulin regimen, increase the frequency of blood glucose monitoring [see Warnings and Precautions (5.2)].

The ADMELOG SoloStar prefilled pen dials in 1-unit increments. Continuous-Subcutaneous Insulin (Insulin Pump)
Administer ADMELOG by continuous subcutaneous infusion in a region recommended in the instructions from the pump manufacturer. Rotate infusion sites within the same region to reduce the risk of lipodystrophy and localized cutaneous amyloidosis. Do not inject into areas of lipodystrophy or localized cutaneous amyloidosis [see Warnings and Precautions (5.2), Adverse Reactions (6)].

Follow healthcare provider recommendations when setting basal and mealtime infusion rate.

ADMELOG is available for continuous subcutaneous administration in the abdominal wall, thigh, or lower arm using the ADMELOG SoloStar prefilled pen in 1-unit increments.

ADMELOG administered by subcutaneous injection should be used in regimens with intermediate or long-acting insulin.
ADMELOG should be administered by subcutaneous injection in the abdominal wall, thigh, upper arm, or buttocks. Rotate injection site within the same region (abdomen, thigh, upper arm, or buttocks) from one injection to the next to reduce the risk of lipodystrophy and localized cutaneous amyloidosis. Do not inject into areas of lipodystrophy or localized cutaneous amyloidosis [see Warnings and Precautions (5.2), Adverse Reactions (6)].

Change ADMELOG in the pump reservoir at least every 7 days.

Change the infusion sets and the infusion set insertion site at least every 3 days.

Do NOT expose ADMELOG in the pump reservoir to temperatures greater than 98.6°F (37°C).

Do NOT mix ADMELOG in the pump reservoir with other insulins.

Use ADMELOG in accordance with the insulin infusion pump systems instructions for use. See the insulin infusion pump system labeling to determine if ADMELOG can be used with the pump system.

Intravenous Administration
Dilute ADMELOG to concentrations from 0.1 unit/mL to 1 unit/mL using 0.9% sodium chloride.

Administer ADMELOG intravenously only under medical supervision with close monitoring of blood glucose and potassium levels to avoid hypoglycemia and hypokalemia [see Warnings and Precautions (5.3, 5.6) and How Supplied/Storage and Handling (16.4)].

2.3 Dosage Information
Individualize and adjust the dosage of ADMELOG based on route of administration, the individual’s metabolic needs, blood glucose monitoring results, and glycomic control goal.

Dosage adjustments may be needed with changes in physical activity, changes in meal patterns (i.e., macronutrient content or timing of food intake), changes in renal or hepatic function, or during acute illness [see Warnings and Precautions (5.2, 5.3) and Use in Specific Populations (8.6, 8.7)].

If changing patients from another insulin lispro product to ADMELOG, the dose of ADMELOG should be the same as the other insulin lispro product [see Warnings and Precautions (5.2)].

2.4 Dosage Adjustment Due to Drug Interactions
Dosage adjustment may be needed when ADMELOG is coadministered with certain drugs [see Drug Interactions (7)].

Dosage adjustment may be needed when switching from another insulin to ADMELOG [see Warnings and Precautions (5.2)].

2.5 Neuter an ADMELOG SoloStar Pen or Syringe Between Patients ADMELOG SoloStar prefilled pen must never be shared between patients, even if the needle is changed. Patients using ADMELOG vials must never share needles or syringes with another person. Sharing poses a risk for transmission of blood-borne pathogens.

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5.2 Hyperglycemia or Hypoglycemia with Changes in Insulin Regimen
Changes in an insulin regimen (e.g., insulin strength, manufacturer, type, injection site or method of administration) may affect glycemic control and predispose to hypoglycemia [see Warnings and Precautions (5.3, 5.4)]. Repeated insulin injections into areas of lipodystrophy or localized cutaneous amyloidosis have been reported to result in hypoglycemia, and a sudden change in the injection site (to unaffected area) has been reported to result in hypoglycemia [see Adverse Reactions (6)].

Make any changes to a patient’s insulin regimen under close medical supervision with increased frequency of blood glucose monitoring. Advise patients who have repeatedly injected into areas of lipodystrophy or localized cutaneous amyloidosis to change the injection site to unaffected areas and closely monitor for hypoglycemia. For patients with type 2 diabetes, dosage adjustments of concomitant anti-diabetic products may be needed.

5.3 Hypoglycemia
Hypoglycemia is the most common adverse reaction associated with insulins, including ADMELOG. Severe hypoglycemia can cause seizures, may be life-threatening, or cause death. Hypoglycemia can impair concentration ability and reaction time; this may place an individual and others at risk in situations where these abilities are important (e.g., driving or operating other machinery).

Hypoglycemia can happen suddenly, and symptoms may differ in each individual and change over time in the same individual. Symptomatic awareness of hypoglycemia may be less pronounced in patients with longstanding diabetes, in patients with diabetic nerve disease, in patients using medications that block the sympathetic nervous system (e.g., beta-blockers) [see Drug Interactions (7)], or in patients who experience recurrent hypoglycemia.

Risk Factors for Hypoglycemia
The risk of hypoglycemia after an injection is related to the duration of action of the insulin and, in general, is highest when the glucose lowering effect of the insulin is maximal. As with all insulin preparations, the glucose lowering effect time course of ADMELOG may vary in different individuals or at different times in the same individual and depends on many conditions, including the area of injection as well as the injection site blood supply and temperature [see Clinical Pharmacology (12.2)].

Other factors which may increase the risk of hypoglycemia include changes in meal pattern (e.g., macronutrient content or timing of meals), changes in level of physical activity, or changes to coadministered medication [see Drug Interactions (7)]. Patients with renal or hepatic impairment may be at higher risk of hypoglycemia [see Use in Specific Populations (8.6, 8.7)].

Risk Mitigation Strategies for Hypoglycemia
Patients and caregivers must be educated to recognize and manage hypoglycemia. Self-monitoring of blood glucose plays an essential role in the prevention and management of hypoglycemia. In patients at higher risk for hypoglycemia and patients who have reduced symptomatic awareness of hypoglycemia, increased frequency of blood glucose monitoring is recommended.

5.4 Hypoglycemia Due to Medication Errors
Accidental mix-ups between basal insulin products and other insulin, particularly rapid-acting insulins, have been reported. To avoid medication errors between ADMELOG and other insulins, instruct patients to always check the insulin label before each injection.

5.5 Sensitivity Reactions
Severe, life-threatening, generalized allergic reactions, including anaphylaxis, can occur with insulin products, including ADMELOG. If hypersensitivity reactions occur, discontinue ADMELOG; treat per standard of care and monitor until symptoms and signs resolve [see Adverse Reactions (6.1)].

ADMELOG is contraindicated in patients who have had hypersensitivity reactions to insulin lispro or any of the excipients [see Contraindications (4)].

5.6 Hypokalemia
All insulin products, including ADMELOG, cause a shift in potassium from the extracellular to intracellular space, possibly leading to hypokalemia. Untreated hypokalemia may cause respiratory paralysis, ventricular arrhythmia, and death. Monitor potassium levels in patients at risk for hypokalemia if indicated (e.g., patients using potassium-lowering medications, patients taking medications sensitive to changes in potassium concentrations).

5.7 Fluid Retention and Heart Failure with Concomitant Use of PPAR-gamma Agonists
Thiazolidinediones (TZDs), which are peroxisome proliferator-activated receptor (PPAR)-gamma agonists, can cause dose-related fluid retention, particularly when used in combination with insulin. Fluid retention may lead to or exacerbate heart failure. Patients treated with insulin, including ADMELOG, and a PPAR-gamma agonist should be observed for signs and symptoms of heart failure. If heart failure develops, it should be managed according to current standards of care, and discontinuation or dose reduction of the PPAR-gamma agonist must be considered.

5.8 Hyperglycemia and Ketoacidosis Due to Insulin Pump Device Malfunction
Malfunction of the insulin pump or insulin infusion set or insulin degradation can rapidly lead to hyperglycemia and ketoacidosis. Prompt identification and correction of the cause of hyperglycemia or ketosis is necessary. Interim subcutaneous injections with ADMELOG may be required. Patients using continuous subcutaneous insulin infusion pump therapy must be trained to administer insulin by injection and have alternate insulin therapy available in case of pump failure [see How Supplied/Storage and Handling (16.2) and Patient Counseling Information (17)].

6 ADVERSE REACTIONS
The following adverse reactions are also discussed elsewhere:

• Hypoglycemia [see Warnings and Precautions (5.3)]
• Sensitivity and allergic reactions [see Warnings and Precautions (5.5)]
• Hypokalemia [see Warnings and Precautions (5.6)]

6.1 Clinical Trials Experience
Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

Two clinical trials with ADMELOG were conducted: one in patients with type 1 diabetes and one in patients with type 2 diabetes [see Clinical Studies (14)].

The data in Table 1 reflect the exposure of 252 patients with type 1 diabetes to ADMELOG with mean exposure duration of 49 weeks. The type 1 diabetes population had the following characteristics: Mean age was 43 years and mean duration of diabetes was 20 years. Fifty-nine percent were male, 80% were White, 6% were Black or African American and 7% were Hispanic. At baseline, the mean eGFR was 90 mL/min/1.73 m² and 49% of patients had eGFR ≥ 90 mL/min/1.73 m². The mean BMI was 26 kg/m². The mean HbA1c at baseline was 8.07%.

Two hundred fifty-three patients with type 2 diabetes were exposed to ADMELOG with mean exposure duration of 25 weeks. The type 2 diabetes population had the following characteristics: Mean age was 52 years and mean duration of diabetes was 17 years. Fifty-four percent were male, 90% were White, 6% were Black or African American and 17% were Hispanic. At baseline, the mean eGFR was 77 mL/min/1.73 m² and 27% of patients had eGFR ≥ 90 mL/min/1.73 m². The mean BMI was 32 kg/m². The mean HbA1c at baseline was 7.99%.

Common adverse reactions were reported as reactions occurring in ≥5% of the population studied.

Common adverse reactions (other than hypoglycemia) during a clinical trial in patients with type 1 diabetes mellitus are listed in Table 1. In a 26-week clinical trial in patients with type 2 diabetes mellitus, no adverse reactions (other than hypoglycemia) occurring in ≥5% of ADMELOG-treated patients (n=253) were observed.
Severe Hypoglycemia

Hypoglycemia is the most commonly observed adverse reaction in patients using insulin, including ADMELOG [see Warnings and Precautions (5.3)]. The rates of reported hypoglycemia depend on the definition of hypoglycemia used, diabetes type, insulin dose, intensity of glucose control, background therapies, and the interaction of endogenous and exogenous patient factors. For these reasons, comparing rates of hypoglycemia in clinical trials for ADMELOG with the incidence of hypoglycemia for other products may be misleading and also, may not be representative of hypoglycemia rates that will occur in clinical practice.

In the ADMELOG trials, severe hypoglycemia was defined as an event requiring assistance of another person to actively administer carbohydrate, glucagon, or other resuscitative actions. The incidence of severe hypoglycemia in patients receiving ADMELOG with type 1 diabetes mellitus and type 2 diabetes mellitus was 13.5% at 52 weeks and 2.4% at 26 weeks, respectively [see Clinical Studies (14)].

Insulin Inflammation and Intensification of Glucose Control

Infusion or rapid improvement in glucose control has been associated with a transitory, reversible ophthalmologic reflexion disorder, worsening of diabetic retinopathy, and acute painful peripheral neuropathy. However, long-term glyemic control decreases the risk of diabetic retinopathy and neuropathy.

Lipodystrophy

Long-term use of insulin, including ADMELOG, can cause lipodystrophy at the site of repeated insulin injections or infusion. Lipodystrophy includes lipoatrophy (thinning of adipose tissue) and lipohypertrophy (thickening of adipose tissue) and may affect insulin absorption. Rotate insulin injection or infusion sites within the same region to reduce the risk of lipodystrophy [see Dosage and Administration (2.3)].

Weight Gain

Weight gain can occur with insulin therapy, including ADMELOG, and has been attributed to the anabolic effects of insulin and the decrease in glucosuria.

Peripheral Edema

Insulin, including ADMELOG, may cause sodium retention and edema, particularly if previously poor metabolic control is not improved by intensified insulin therapy.

Adverse Reactions with Continuous Subcutaneous Insulin Infusion (CSI)

In a randomized, open-label crossover study in adult patients with type 1 diabetes treated over two 4-week periods, the incidence of infusion set occlusions (defined as failure to correct hyperglycemia [plasma glucose ≥300 mg/dL] by insulin bolus via insulin pump) in ADMELOG-treated patients (n=25) was evaluated. Infusion-set occlusions were reported by 24% of patients.

In a randomized, 16-week, open-label, parallel design study of children and adolescents with type 1 diabetes, adverse event reports related to infusion-site reactions for another insulin lispro product, 100 units/mL, occurred in 21% of patients. The most frequently reported infusion site adverse events were infusion site erythema and infusion site reaction.

Allergic Reactions

Local allergy

As with any insulin therapy, patients taking ADMELOG may experience redness, swelling, or itching at the site of the injection. These minor reactions usually resolve in a few days to a few weeks, but in some occasions may require discontinuation of ADMELOG. In some instances, these reactions may be related to factors other than insulin, such as irritants in a skin cleansing agent or poor injection technique.

Systemic allergy

Severe, life-threatening, generalized allergy, including anaphylaxis, may occur with any insulin, be related to factors other than insulin, such as irritants in a skin cleansing agent or poor injection technique, or may occur in the absence of any observed local allergy. Type I skin testing is not reliable for predicting risk of systemic allergy. Patients with a history of localized allergy may be at increased risk for systemic allergy.

In a combined fertility and embryo-fetal development study with another insulin lispro product, female rats were given subcutaneous insulin lispro injections of 5 and 20 units/kg/day (0.8 and 3 times the human subcutaneous dose of 1 unit/kg/day), based on units/body surface area, respectively) from 2 weeks prior to cohabitation through Gestation Day 19. There were no adverse effects on female fertility, implantation, or fetal viability and morphology. However, fetal growth retardation was observed in offspring of rats exposed to insulin lispro at a dose approximately 3 times the human subcutaneous dose of 1.0 unit/kg/day. No adverse effects on pre-and/or postnatal development were observed in offspring of rabbits exposed to insulin lispro at doses up to approximately 0.24 times the human subcutaneous dose of 1.0 unit/kg/day [see Data].

In a 52-week study of ADMELOG in type 1 diabetes patients, 49.4% were positive at baseline and 22.6% had treatment-emergent ADA (i.e., either new ADA, or increase in titer of at least 4-fold).

In a 26-week study of ADMELOG in type 2 diabetes patients, 26.4% were positive at baseline and 18.8% had treatment-emergent ADA (i.e., either new ADA, or increase in titer of at least 4-fold).

In a randomized, open-label, crossover study in adult patients with type 1 diabetes treated over two 4-week periods, the incidence of infusion set occlusions (defined as failure to correct hyperglycemia [plasma glucose ≥300 mg/dL] by insulin bolus via insulin pump) in ADMELOG-treated patients (n=25) was evaluated. Infusion-set occlusions were reported by 24% of patients.

7.2 Drugs that May Decrease the Blood Glucose Lowering Effect of ADMELOG

The glucose lowering effect of ADMELOG may be decreased when coadministered with corticosteroids, onazid, niasin, estradiol, oral contraceptives, phenothiazines, dexamethasone, diuretics, sympathomimetic agents (e.g., epinephrine, albuterol, terbutaline), somatropin, thyrotrophic agents, glucocorticoids, and thyroid hormones. Dose adjustment and increased frequency of glucose monitoring may be required when ADMELOG is coadministered with these drugs.

7.3 Drugs that May Increase or Decrease the Blood Glucose Lowering Effect of ADMELOG

The glucose lowering effect of ADMELOG may be increased or decreased when coadministered with antihypertensive agents, beta-blockers, clonidine, lithium salts, and alcohol. Pentamidine may cause hypoglycemia, which may sometimes be followed by hyperglycemia. Dose adjustment and increased frequency of glucose monitoring may be required when ADMELOG is coadministered with these drugs.

7.4 Drugs that May Blur Signs and Symptoms of Hypoglycemia

The signs and symptoms of hypoglycemia [see Warnings and Precautions (5.3)] may be blunted when beta-blockers, clonidine, quinidine, and reserpine are coadministered with ADMELOG.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Risk Summary

The limited available data with ADMELOG in pregnant women are insufficient to inform a drug-associated risk of adverse developmental outcomes. Published studies with another insulin lispro product used during pregnancy have not reported an association between insulin lispro and the induction of major birth defects, miscarriage, or adverse maternal or fetal outcomes [see Data]. There are risks to the mother and fetus associated with poorly controlled diabetes in pregnancy [see Clinical Considerations].

Pregnant rats and rabbits were exposed to another insulin lispro product in animal reproduction studies during organogenesis. Fetal growth retardation was observed in offspring of rats exposed to insulin lispro at a dose approximately 3 times the human subcutaneous dose of 1.0 unit/kg/day. No adverse effects were observed in offspring of rabbits exposed to insulin lispro at a dose up to approximately 0.24 times the human subcutaneous dose of 1.0 unit/kg/day [see Data].

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8.2 Lactation

Risk Summary

There is no information regarding the presence of insulin lispro in human milk, the effects on the breastfed infant, or the effects on milk production. Endogenous insulin is present in human milk.

Animal data

In an embryo-fetal development study in pregnant rabbits with another insulin lispro product, insulin lispro doses of 0.1, 0.25, and 0.75 unit/kg/day (0.03, 0.08, and 0.24 times the human subcutaneous dose of 1 unit/kg/day, based on units/body surface area, respectively) were injected subcutaneously on Gestation Days 7 through 19. There were no adverse effects on fetal viability, weight, and morphology at any dose.

8.3 Geriatric Use

The safety and effectiveness of ADMELOG have not been established in pediatric patients younger than 3 years of age with type 1 diabetes mellitus or in pediatric patients with type 2 diabetes mellitus.

The dosage of ADMELOG must be individualized in pediatric patients based on metabolic needs and insulin requirements, frequent monitoring of blood glucose.
ADMELOG is a sterile, aqueous, clear, and colorless solution. Each milliliter of ADMELOG contains insulin lispro 100 units, 16 mg glycerin, 1.36 mg disaccharide sodium phosphate, 3.15 mg metacresol, zinc hydroxide.

The pH is adjusted by addition of aqueous solutions of hydrochloric acid and/or sodium hydroxide.

The absolute bioavailability of another insulin lispro product, 100 units/mL, after subcutaneous injection was tested in 21 patients with type 1 diabetes. For the study, the patients' usual doses of insulin were held, and blood glucose concentrations were allowed to reach a stable range of 200 to 280 mg/dL during a one to three-hour run-in phase. The run-in phase was followed by a 6-hour assessment phase. During the assessment phase, patients received intravenous infusion of another insulin lispro product, 100 units/mL, at an initial infusion rate of 0.5 units/hour. The infusion rate could be adjusted at regular timed intervals to achieve and maintain blood glucose concentrations between 100 to 160 mg/dL.

The mean blood glucose levels during the assessment phase for patients on another insulin lispro product, 100 units/mL, therapy are summarized below in Table 2. All patients achieved the targeted glucose range at some point during the 6-hour assessment phase. At the endpoint, blood glucose was within the target range (100 to 160 mg/dL) for 17 of 20 patients treated with another insulin lispro product, 100 units/mL. The average time (±SE) required to attain near normoglycemia was $129 \pm 14$ minutes for another insulin lispro product, 100 units/mL.

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<thead>
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<tr>
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*Results shown as mean ± SD.

### 12.3 Pharmacokinetics

#### Absorption

The pharmacokinetic profile of a single 0.3 unit/kg dose of ADMELOG administered subcutaneously was evaluated in a study enrolling 30 patients with type 1 diabetes. In this study, the mean (SD) time to maximum effect of ADMELOG (measured by the peak rate of glucose infusion) was approximately 2.07 (0.78) hours. The mean (SD) area under the glucose infusion rate curves (measure of overall pharmacodynamic effect) and mean (SD) maximum glucose infusion rate were 1953.5 (547.3) mg/kg and 9.97 (2.37) mg/min/kg, respectively (see Figure 1).

#### Intravenous Administration

The glucose lowering effect of intravenous administration of another insulin lispro product, 100 units/mL, was tested in 21 patients with type 1 diabetes. For the study, the patients' usual doses of insulin were held, and blood glucose concentrations were allowed to reach a stable range of 200 to 280 mg/dL during a one to three-hour run-in phase. The run-in phase was followed by a 6-hour assessment phase. During the assessment phase, patients received intravenous infusion of another insulin lispro product, 100 units/mL, at an initial infusion rate of 0.5 units/hour. The infusion rate could be adjusted at regular timed intervals to achieve and maintain blood glucose concentrations between 100 to 160 mg/dL.

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#### Distribution

When administered intravenously as bolus injections of 0.1 and 0.2 unit/kg dose in two separate groups of healthy subjects, the mean observed area under the plasma insulin lispro concentration-time curve from time zero to infinity and peak plasma insulin lispro concentration were 12800 pg·h/mL and 5070 pg/mL, respectively. The median time to maximum plasma insulin lispro concentration was 0.83 hours after injection (see Figure 2).

#### Metabolism

Human metabolism studies have not been conducted. However, animal studies indicate that the metabolism of another insulin lispro product, 100 units/mL, is identical to that of regular human insulin.

#### Excretion

When administered intravenously, another insulin lispro product, 100 units/mL demonstrated dose-dependent clearance, with a mean clearance of 21.3 mL/min/kg (0.1 unit/kg dose), and 9.6 mL/min/kg (0.2 unit/kg dose). Another insulin lispro product, 100 units/mL, demonstrated a mean $t_{1/2}$ of 0.85 hours (51 minutes) and 0.92 hours (55 minutes), respectively for 0.1 unit/kg and 0.2 unit/kg doses.

#### Specific Populations

The effects of age, gender, race, obesity, pregnancy, or smoking on the pharmacokinetics of ADMELOG have not been studied.

Patients with renal impairment

Type 2 diabetic patients with varying degrees of renal impairment showed no difference in pharmacokinetics of another insulin lispro product, 100 units/mL. However, the sensitivity of the patients to insulin did change, with an increased response to insulin as the renal function declined. Some studies
with human insulin have shown increased circulating levels of insulin in patients with renal impairment. Careful glucose monitoring and dose adjustments of insulin, including ADMELOG, may be necessary in patients with renal dysfunction.

Patients with hepatic impairment

Type 2 diabetic patients with impaired hepatic function showed no effect on the pharmacokinetics of another insulin lispro product, 100 units/mL, as compared to patients with no hepatic dysfunction. However, some studies with human insulin have shown increased circulating levels of insulin in patients with liver failure. Careful glucose monitoring and dose adjustments of insulin, including ADMELOG, may be necessary in patients with hepatic dysfunction.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Standard 2-year carcinogenicity studies in animals have not been performed. In Fischer 344 rats, a 12-month repeat-dose toxicity study was conducted with insulin lispro at subcutaneous doses of 20 and 200 units/kg/day (approximately 3 and 22 times the human subcutaneous dose of 1 unit/kg/day, based on units/body surface area). Insulin lispro did not produce important target organ toxicity including mammary tumors at any dose.

Insulin lispro was not mutagenic in the following genetic toxicity assays: bacterial mutation, unscheduled DNA synthesis, mouse lymphoma, chromosomal aberration, and micronucleus assays. Male fertility was not compromised when male rats given subcutaneous insulin lispro injections of 5 and 20 units/kg/day (0.8 and 3 times the human subcutaneous dose of 1 unit/kg/day, based on units/body surface area) for 6 months were mated with untreated female rats. In a combined fertility, perinatal, and postnatal study in male and female rats given 1, 5, and 20 units/kg/day subcutaneously (0.16, 0.8, and 3 times the human subcutaneous dose of 1 unit/kg/day, based on units/body surface area), mating and fertility were not adversely affected in either gender at any dose.

14 CLINICAL STUDIES

14.1 Overview of Clinical Studies

The safety and effectiveness of ADMELOG have been established based on adequate and well-controlled studies of ADMELOG in adult patients with type 1 and type 2 diabetes mellitus, and based on adequate and well-controlled studies of another insulin lispro product, 100 units/mL, in adult and pediatric patients 3 years of age and older with type 1 diabetes mellitus and adult patients with type 2 diabetes mellitus.

The safety and effectiveness of ADMELOG were studied in 507 adult patients with type 1 diabetes and 505 adult patients with type 2 diabetes. The safety and effectiveness of another insulin lispro product, 100 units/mL, were studied in 1,087 adult and pediatric patients with type 1 diabetes and in 722 adult patients with type 2 diabetes.

14.2 Type 1 Diabetes Mellitus – Subcutaneous Injection

ADMELOG: Study in Adult Patients

A 26-week open-label, active-controlled study (NCT02273180) evaluated the glucose lowering effect of ADMELOG plus insulin glargine, 100 units/mL, compared to that of Comparator (another insulin lispro product, 100 units/mL, or a non-U.S.-approved insulin lispro, 100 units/mL, plus insulin glargine, 100 units/mL). A total of 507 patients with type 1 diabetes mellitus treated with insulin glargine 100 units/mL and rapid-acting mealtime insulin analogs participated in the study. Patients were randomized to ADMELOG (n=253) or Comparator (n=254). ADMELOG or Comparator was administered by subcutaneous injection immediately prior to meals.

The mean age of these subjects was 43 years, and 59.6% were male. The population had type 1 diabetes mellitus for a mean duration of 19 years. The mean eGFR was 90.6 mL/min/1.73 m². Patients with hepatic impairment showed no effect on the pharmacokinetics of another insulin lispro product, 100 units/mL, as compared to patients with no hepatic dysfunction.

Another Insulin Lispro Product, 100 units/mL: Studies in Pediatric Patients 4 Years of Age and Older

A 12-month, randomized, parallel, open-label, active-controlled study was conducted in 167 patients with type 1 diabetes to assess the safety and efficacy of another insulin lispro product, 100 units/mL (n=81), compared with regular human insulin, 100 units/mL (n=86). This other insulin lispro product was administered by subcutaneous injection immediately prior to meals and regular human insulin was administered 30 to 45 minutes before meals. Human insulin extended zinc suspension was administered once or twice daily as the basal insulin. There was a 2 to 4-week run-in period with regular human insulin and human insulin extended zinc suspension before randomization.

The mean age of these subjects was 31 years (range 12 to 70 years), and 47% were male. The population was 87% White.
In-use (opened) ADMELOG vials and ADMELOG SoloStar pens should be stored at room temperature (Below 86°F [30°C]) and must be used within 28 days or be discarded, even if they still contain ADMELOG. Protect from direct heat and light.

See table below:

### Table 7: Type 2 Diabetes Mellitus – Adults – Mean Change in HbA1c (%) (ADMELOG plus insulin glargine, 100 units/mL, versus comparator plus insulin glargine, 100 units/mL)

<table>
<thead>
<tr>
<th>Treatment Duration</th>
<th>Treatment in Combination with:</th>
<th>ADMELOG</th>
<th>Comparator</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 Weeks</td>
<td>Insulin Glargine</td>
<td>253</td>
<td>252</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>Baseline (mean)</td>
<td>8.00</td>
<td>8.03</td>
</tr>
<tr>
<td></td>
<td>Adjusted mean change from baseline†</td>
<td>-0.86</td>
<td>-0.80</td>
</tr>
<tr>
<td></td>
<td>Adjusted mean difference† (95% CI)</td>
<td>-0.06 [-0.209 to 0.091]</td>
<td></td>
</tr>
</tbody>
</table>

†ITT: Intent-to-treat; all randomized patients

‡Estimated using a multiple imputation method that models a “return-to-baseline” for patients having missing data who discontinued treatment. ANCOVA was used with treatment and stratification groups as fixed factors and baseline HbA1c as a covariate.

§Treatment difference: ADMELOG – Comparator.

Another Insulin Lispro Product, 100 units/mL, 100 units/mL, Study in Adult Patients

A 6-month randomized, crossover, open-label, active-controlled study was conducted in 722 patients with type 2 diabetes mellitus treated with insulin to assess the safety and efficacy of another insulin lispro product, 100 units/mL, for 3 months followed by regular human insulin, 100 units/mL, for 3 months or the reverse sequence. This other insulin lispro product was administered by subcutaneous injection immediately before meals and regular human insulin was administered 30 to 45 minutes before meals.

NPH human insulin isophane suspension or human insulin extended zinc suspension was administered once or twice daily as the basal insulin. All patients participated in a 2 to 4-week run-in period with regular human insulin and NPH human insulin isophane suspension or human insulin extended zinc suspension was administered once or twice daily as the basal insulin. All patients participated in a 2 to 4-week run-in period with regular human insulin and NPH human insulin isophane suspension or human insulin extended zinc suspension.

Most of the patients were Caucasian (88%), and the number of men and women in each group were approximately equal. The mean age was 58.6 years (range 23.8 to 85 years). The average body mass index (BMI) was 28.2 kg/m². During the study, the majority of patients used NPH human insulin isophane suspension (84%) compared with human insulin extended zinc suspension (16%) as their basal insulin. The reductions from baseline in HbA1c were similar between the two treatments from the combined groups (see Table 8).

### Table 8: Type 2 Diabetes Mellitus – Adults – Mean Change in HbA1c (%) (another insulin lispro product, 100 units/mL, versus regular human insulin, 100 units/mL)

<table>
<thead>
<tr>
<th>Treatment Duration</th>
<th>Baseline</th>
<th>Another Insulin Lispro Product + Basal</th>
<th>Regular Human Insulin + Basal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Months</td>
<td>HbA1c (%)</td>
<td>8.9 ± 1.7</td>
<td>8.2 ± 1.3</td>
</tr>
<tr>
<td></td>
<td>Change from baseline HbA1c (%)</td>
<td>-0.7 ± 1.4</td>
<td>-0.7 ± 1.3</td>
</tr>
</tbody>
</table>

†Values are mean ± SD.

### 16 HOW SUPPLIED/STORAGE AND HANDLING

#### 16.1 How Supplied

ADMELOG: Insulin Lispro Injection 100 units per mL (U-100) is available as:

- 10 mL multiple-dose vial
- 3 mL multiple-dose vial
- 3 mL single patient use SoloStar prefilled pen

Each prefilled SoloStar pen is for use by a single patient. ADMELOG SoloStar pen must never be shared between patients, even if the needle is changed. Patients using ADMELOG vials must never share needles or syringes with another person.

The ADMELOG SoloStar prefilled pen dials in 1-unit increments.

#### 16.2 Storage and Handling

Dispense in the original sealed carton with the enclosed Instructions for Use. Do not use after the expiration date.

Not in-use (unopened) ADMELOG should be stored in a refrigerator (36°F-46°F [2°C-8°C]), but not in the freezer. Do not use ADMELOG if it has been frozen.
Problems include pump malfunction, infusion set occlusion, leakage, disconnection or kinking, and degraded insulin. Less commonly, hypoglycemia from pump malfunction may occur. Instruct patients to resume therapy with subcutaneous insulin injection and contact their healthcare professional if these problems cannot be promptly corrected [see Dosage and Administration (2.2) and How Supplied/Storage and Handling (16.2)].

**ADMELOG and SoloStar are registered trademarks of sanofi-aventis U.S. LLC.**

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**How should I use ADMELOG?**

- Read the detailed Instructions for Use that come with your ADMELOG.
- Use ADMELOG exactly as your healthcare provider tells you to. Your healthcare provider should tell you how much ADMELOG to use and when to use it.
- Know the amount of ADMELOG you use. Do not change the amount of ADMELOG you use unless your healthcare provider tells you to. The amount of insulin and the best time for you to take your insulin may need to change if you take a different type of insulin.
- Check your insulin label each time you give your injection to make sure you are using the correct insulin.
- ADMELOG comes in a vial or in a SoloStar single-patient-use prefilled pen.
- **Do not** reuse needles. Always use a new needle for each injection. Reuse of needles increases your risk of having blocked needles, which may cause you to get the wrong dose of ADMELOG. Using a new needle for each injection also lowers your risk of getting an infection. If your needle is blocked, follow the instructions in Step 3 of the Instructions for Use of your pen.
- ADMELOG is a rapid-acting insulin. Take ADMELOG within 15 minutes before eating or right after eating a meal.
- ADMELOG is injected under the skin (subcutaneously) of your upper arms, thighs, buttocks, or stomach area (abdomen), or by continuous infusion under the skin (subcutaneously) through an insulin pump into an area of your body recommended in the instructions that come with your insulin pump.
- Change (rotate) your injection site within the area you choose with each dose to reduce your risk of getting lipodystrophy (pits in skin or thickened skin) and localized cutaneous amyloidosis (skin with lumps) at the injection sites.
  - **Do not** use the exact same spot for each injection.
  - **Do not** inject where the skin has pits, is thickened, or has lumps.
  - **Do not** inject where the skin is tender, bruised, scaly or hard, or into scars or damaged skin.
- **Check your blood sugar levels.** Ask your healthcare provider what your blood sugar should be and when you should check your blood sugar levels.

**Your dose of ADMELOG may need to change because of:**

- a change in physical activity or exercise, weight gain or loss, increased stress, illness, change in diet, or because of other medicines you take.

**What should I avoid while using ADMELOG?**

While using ADMELOG do not:

- drive or operate heavy machinery, until you know how ADMELOG affects you.
- drink alcohol or use prescription or over-the-counter medicines that contain alcohol.
What are the possible side effects of ADMELOG?

ADMELOG may cause serious side effects that can lead to death, including:

- **low blood sugar (hypoglycemia).** Signs and symptoms that may indicate low blood sugar include:
  - dizziness or light-headedness, sweating, confusion, headache, blurred vision, slurred speech, shakiness, fast heartbeat, anxiety, irritability or mood changes, hunger.
- **serious allergic reactions (whole body reaction).** Get medical help right away, if you have any of these signs or symptoms of a severe allergic reaction:
  - a rash over your whole body, trouble breathing, a fast heartbeat, feel faint, or sweating.
- **low potassium in your blood (hypokalemia).**
- **heart failure.** Taking certain diabetes pills called TZDs (thiazolidinediones) with ADMELOG may cause heart failure in some people. This can happen even if you have never had heart failure or heart problems before. If you already have heart failure it may get worse while you take TZDs with ADMELOG. Your healthcare provider should monitor you closely while you are taking TZDs with ADMELOG. Tell your healthcare provider if you have any new or worse symptoms of heart failure including:
  - shortness of breath, swelling of your ankles or feet, sudden weight gain.

Treatment with TZDs and ADMELOG may need to be adjusted or stopped by your healthcare provider if you have new or worse heart failure.

Get emergency medical help if you have:

- trouble breathing, shortness of breath, fast heartbeat, swelling of your face, tongue, or throat, sweating, extreme drowsiness, dizziness, confusion.

The most common side effects of ADMELOG include:

- **low blood sugar (hypoglycemia),** allergic reactions, including reactions at the injection site, skin thickening or pits at the injection site (lipodystrophy), itching, and rash.

These are not all the possible side effects of ADMELOG. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

### Instructions for Use

**ADMELOG<sup>®</sup>** (ad-mah-log) (insulin lispro injection) for subcutaneous use

10 mL or 3 mL Vial (100 Units/mL, U-100)

Read these Instructions for Use before you start taking ADMELOG and each time you get a new ADMELOG vial. There may be new information. This information does not take the place of talking to your healthcare provider about your medical condition or your treatment.

Do not share your ADMELOG syringes with other people, even if the needle has been changed. You may give other people a serious infection, or get a serious infection from them.

### Supplies needed to give your injection

- an ADMELOG 10 mL or 3 mL vial
- a U-100 insulin syringe and needle
- 2 alcohol swabs
- 1 sharps container for throwing away used needles and syringes.

See “Disposing of used needles and syringes” at the end of these instructions.

### Preparing your ADMELOG dose

- Wash your hands with soap and water or with alcohol.
- Check the ADMELOG label to make sure you are taking the right type of insulin. This is especially important if you use more than 1 type of insulin.
- Check the insulin to make sure it is clear and colorless. Do not use ADMELOG if it is colored or cloudy, or if you see particles in the solution.
- Do not use ADMELOG after the expiration date stamped on the label or 28 days after you first use it.
- **Always use a syringe that is marked for U-100 insulin.** If you use a syringe other than a U-100 insulin syringe, you may get the wrong dose of insulin.
- **Always use a new syringe or needle for each injection to help ensure sterility and prevent blocked needles.** Do not reuse or share your syringes or needles with other people. You may give other people a serious infection or get a serious infection from them.

### Step 1:

If you are using a new vial, remove the protective cap. Do not remove the stopper.

![Step 1](image)

### Step 2:

Wipe the top of the vial with an alcohol swab. You do not have to shake the vial of ADMELOG before use.

![Step 2](image)

### Step 3:

Draw air into the syringe equal to your insulin dose. Put the needle through the rubber top of the vial and push the plunger to inject the air into the vial.

![Step 3](image)
Giving your ADMELOG injection with a syringe

Step 4:
Leave the syringe in the vial and turn both upside down. Hold the syringe and vial firmly in one hand. Make sure the tip of the needle is in the insulin. With your free hand, pull the plunger to withdraw the correct dose into the syringe.

Step 5:
Before you take the needle out of the vial, check the syringe for air bubbles. If bubbles are in the syringe, hold the syringe straight up and tap the side of the syringe until the bubbles float to the top. Push the bubbles out with the plunger and draw insulin back in until you have the correct dose.

Step 6:
Remove the needle from the vial. Do not let the needle touch anything. You are now ready to inject.

Giving your ADMELOG injection with a syringe

- Inject your insulin exactly as your healthcare provider has shown you.
- ADMELOG starts acting fast, so give your injection within 15 minutes before or right after you eat a meal.

Step 7:
- Choose your injection site: ADMELOG is injected under the skin (subcutaneously) of your upper arms, thighs, buttocks, or stomach area (abdomen).
- Change (rotate) your injection sites within the area you choose for each dose to reduce your risk of getting lipodystrophy (pits in skin or thickened skin) and localized cutaneous amyloidosis (skin with lumps) at the injection sites. Do not inject where the skin has pits, is thickened, or has lumps.
- Do not inject where the skin is tender, bruised, scaly or hard, or into scars or damaged skin.
- Do not inject where the skin has pits, is thickened, or has lumps.
- Do not inject where the skin is tender, bruised, scaly or hard, or into scars or damaged skin.
- Wipe the skin with an alcohol swab to clean the injection site. Let the injection site dry before you inject your dose.

Step 8:
- Pinch the skin.
- Insert the needle in the way your healthcare provider showed you.
- Release the skin.
- Slowly push in the plunger of the syringe all the way, making sure you have injected all the insulin.
- Leave the needle in the skin for about 10 seconds.

Step 9:
- Pull the needle straight out of your skin.
- Gently press the injection site for several seconds. Do not rub the area.
- Do not recap the used needle. Recapping the needle can lead to a needle-stick injury.

Giving your ADMELOG using an insulin pump

- ADMELOG should be inserted into an area of your body recommended in the instructions that come with your insulin pump.
- Change your insertion site every 3 days.
- Change (rotate) your insertion sites within the area you choose for each dose to reduce your risk of getting lipodystrophy (pits in skin or thickened skin) and localized cutaneous amyloidosis (skin with lumps) at the injection sites. Do not inject into the exact same spot for each injection. Do not insert where the skin has pits, is thickened, or has lumps. Do not insert where the skin is tender, bruised, scaly or hard, or into scars or damaged skin.
- Change the insulin in the reservoir at least every 7 days, even if you have not used all of the insulin.
- Do not dilute or mix ADMELOG with any other type of insulin in your insulin pump.
- See your insulin pump manual for instructions or talk to your healthcare provider.

Disposing of used needles and syringes

- Put your used needles and syringes in a FDA-cleared sharps disposal container right away after use. Do not throw away (dispose of) loose needles and syringes in your household trash.
- If you do not have a FDA-cleared sharps container, you may use a household container that is:
  - made of a heavy-duty plastic, properly labeled to warn of hazardous waste inside the container.
  - leak resistant, and
  - upright and stable during use.
  - can be closed with a tight-fitting, puncture-resistant lid, without sharps being able to come out.
  - made of a heavy-duty plastic, properly labeled to warn of hazardous waste inside the container.
  - upright and stable during use.
  - can be closed with a tight-fitting, puncture-resistant lid, without sharps being able to come out.
- When your sharps disposal container is almost full, you will need to follow your community guidelines for the right way to dispose of your sharps disposal container. There may be state or local laws about how you should throw away used needles and syringes. For more information about safe sharps disposal, and for specific information about sharps disposal in the state that you live in, go to the FDA's website at: http://www.fda.gov/safesharpsdisposal.
- Do not dispose of your used sharps disposal container in your household trash unless your community guidelines permit this. Do not recycle your used sharps disposal container.

How should I store ADMELOG?

Unopened (not in-use) ADMELOG vials
- Store unused ADMELOG vials in the refrigerator from 36°F to 46°F (2°C to 8°C).
- Do not freeze ADMELOG.
- Keep ADMELOG away from direct heat and light.
- If a vial has been frozen or overheated, throw it away.
- Unopened vials can be used until the expiration date on the carton and label if they have been stored in the refrigerator.
• Unopened vials should be thrown away after 28 days if they are stored at room temperature.

After ADMELOG vials have been opened (in-use)
• Store in-use (opened) ADMELOG vials in a refrigerator from 36°F to 46°F (2°C to 8°C) or at room temperature below 86°F (30°C) for up to 28 days.
• Do not freeze ADMELOG.
• Keep ADMELOG out of direct heat and light.
• If a vial has been frozen, throw it away.
• The ADMELOG vial you are using should be thrown away after 28 days, even if it still has insulin left in it.

This Instructions for Use has been approved by the U.S. Food and Drug Administration.

sanofi-aventis U.S. LLC, Bridgewater, NJ 08807, A SANOFI COMPANY

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Revised: November 2019

Instructions for Use
ADMELOG® SoloStar® (ad-mah-log)
(insulin lispro injection) for subcutaneous use
3 mL single-patient-use prefilled pen (100 Units/mL, U-100)

Read this first
Do not share your ADMELOG SoloStar pen with other people, even if the needle has been changed. You may give other people a serious infection, or get a serious infection from them.

People who are blind or have vision problems should not use ADMELOG SoloStar prefilled pen without help from a person trained to use ADMELOG SoloStar prefilled pen.

ADMELOG SoloStar is a disposable prefilled pen used to inject ADMELOG. Each ADMELOG SoloStar has 300 units of insulin which can be used for multiple injections. You can select doses from 1 to 80 units in steps of 1 unit. The pen plunger moves with each dose. The plunger will only move to the end of the cartridge when 300 units of insulin have been given.

Important information
• Do not use your pen if it is damaged or if you are not sure that it is working properly.
• Do not use a syringe to remove insulin from your pen.
• Do not reuse needles. If you do, you might get the wrong dose of ADMELOG and/or increase the chance of getting an infection.
• Always perform a safety test (see Step 3).
• Always carry a spare pen and spare needles in case they got lost or stop working.
• Change (rotate) your injection sites within the area you choose for each dose (see “Places to inject”).

Learn to inject
• Talk with your healthcare provider about how to inject before using your pen.
• Ask for help if you have problems handling the pen, for example if you have problems with your sight.
• Read all of these instructions before using your pen. If you do not follow all of these instructions, you may get too much or too little insulin.

Need help?
If you have any questions about your pen or about diabetes, ask your healthcare provider, or go to www.Admelog.com or call sanofi-aventis at 1-800-633-1610.

Extra items you will need:
• a new sterile needle (see Step 2).
• an alcohol swab.
• a puncture-resistant container for used needles and pens. (See “Throwing your pen away”).

Places to inject
• Inject your insulin exactly as your healthcare provider has shown you.
• Inject your insulin under the skin (subcutaneously) of your upper legs (thighs), upper arms, or stomach area (abdomen).

Get to know your pen

Step 1: Check your pen
Take a new pen out of the refrigerator at least 1 hour before you inject. Cold insulin is more painful to inject.

1A Check the name and expiration date on the label of your pen.
• Make sure you have the correct insulin.
• Do not use your pen after the expiration date.

1B Pull off the pen cap.
1C Check that the insulin is clear.
   • Do not use the pen if the insulin looks cloudy, colored or contains particles.

1D Wipe the rubber seal with an alcohol swab.

If you have other injector pens:
   • Making sure you have the correct medicine is especially important if you have other injector pens.

Step 2: Attach a new needle
   • Do not reuse needles. Always use a new sterile needle for each injection. This helps stop blocked needles, contamination, and infection.
   • Only use needles\(^1\) that are compatible for use with ADMELOG SoloStar, e.g. needles from BD (such as BD Ultra-Fine\(^\circledR\)), Ypsomed (such as Clickfine\(^\circledR\)), Owen Mumford (such as Unifine\(^\circledR\) Pentips\(^\circledR\)).

2A Take a new needle and peel off the protective seal.

2B Keep the needle straight and screw it onto the pen until fixed. Do not over-tighten.

2C Pull off the outer needle cap. Keep this for later.

2D Pull off the inner needle cap and throw away.

Handling needles:
   • Take care when handling needles to prevent needle-stick injury and cross-infection.

Step 3: Do a safety test
Always do a safety test before each injection to:
   • Check your pen and the needle to make sure they are working properly.
   • Make sure that you get the correct insulin dose.

3A Select 2 units by turning the dose selector until the dose pointer is at the 2 mark.

3B Press the injection button all the way in.
   • When insulin comes out of the needle tip, your pen is working correctly.

If no insulin appears:
   • You may need to repeat this step up to 3 times before seeing insulin.
   • If no insulin comes out after the third time, the needle may be blocked. If this happens:
     – change the needle (see Step 6 and Step 2),
     – then repeat the safety test (Step 3).
   • Do not use your pen if there is still no insulin coming out of the needle tip. Use a new pen.
   • Do not use a syringe to remove insulin from your pen.

If you see air bubbles:
   • You may see air bubbles in the insulin. This is normal, they will not harm you.

Step 4: Select the dose
Do not select a dose or press the injection button without a needle attached. This may damage your pen.

4A Make sure a needle is attached and the dose is set to ‘0’.
4B Turn the dose selector until the dose pointer lines up with your dose.
- If you turn past your dose, you can turn back down.
- If there are not enough units left in your pen for your dose, the dose selector will stop at the number of units left.
- If you cannot select your full prescribed dose, use a new pen or inject the remaining units and use a new pen to complete your dose.

How to read the dose window
Even numbers are shown in line with dose pointer.

20 units selected

Odd numbers are shown as a line between even numbers.

21 units selected

Units of insulin in your pen:
- Your pen contains a total of 300 units of insulin. You can select doses from 1 to 80 units in steps of 1 unit. Each pen contains more than 1 dose.
- You can see roughly how many units of insulin are left by looking at where the plunger is on the insulin scale.

Step 5: Inject your dose
If you find it hard to press the injection button in, do not force it as this may break your pen. See the section below for help.
5A Choose a place to inject as shown in the picture above.
5B Push the needle into your skin as shown by your healthcare provider.
- Do not touch the injection button yet.

5C Place your thumb on the injection button. Then press all the way in and hold.
- Do not press at an angle. Your thumb could block the dose selector from turning.

5D Keep the injection button held in and when you see “0” in the dose window, slowly count to 10.
- This will make sure you get your full dose.

5E After holding and slowly counting to 10, release the injection button. Then remove the needle from your skin.
If you find it hard to press the button in:
- Change the needle (see Step 6 and Step 2) then do a safety test (see Step 3).
- If you still find it hard to press in, get a new pen.
- Do not use a syringe to remove insulin from your pen.

Step 6: Remove the needle
- Take care when handling needles to prevent needle-stick injury and cross-infection.
- Do not put the inner needle cap back on.
6A Grip the widest part of the outer needle cap. Keep the needle straight and guide it into the outer needle cap. Then push firmly on.
- The needle can puncture the cap if it is recapped at an angle.

6B Grip and squeeze the widest part of the outer needle cap. Turn your pen several times with your other hand to remove the needle.
- Try again if the needle does not come off the first time.
6C Throw away the used needle in a puncture-resistant container (see “Throwing your pen away” at the end of this Instructions for Use).

6D Put your pen cap back on.
- Do not put the pen back in the refrigerator.

How to store your pen

Before first use
- Keep new pens in the refrigerator between 36°F to 46°F (2°C to 8°C).
- Do not freeze. Do not use ADMELOG if it has been frozen.

After first use
- Keep your pen at room temperature below 86°F (30°C).
- Keep your pen away from heat or light.
- Store your pen with the pen cap on.
- Do not put your pen back in the refrigerator.
- Do not store your pen with the needle attached.
- Keep out of the reach of children.
- Only use your pen for up to 28 days after its first use. Throw away the ADMELOG SoloStar pen you are using after 28 days, even if it still has insulin left in it.

How to care for your pen

Handle your pen with care
- Do not drop your pen or knock it against hard surfaces.
- If you think that your pen may be damaged, do not try to fix it. Use a new one.

Protect your pen from dust and dirt
- You can clean the outside of your pen by wiping it with a damp cloth (water only). Do not soak, wash or lubricate your pen. This may damage it.

Throwing your pen away
- Put the used ADMELOG SoloStar pen in a FDA-cleared sharps disposal container right away after use. Do not throw away (dispose of) the ADMELOG SoloStar pen in your household trash.
- If you do not have a FDA-cleared sharps disposal container, you may use a household container that is:
  - made of a heavy-duty plastic,
  - can be closed with a tight-fitting, puncture-resistant lid, without sharps being able to come out,
  - upright and stable during use,
  - leak-resistant, and
  - properly labeled to warn of hazardous waste inside the container.
- When your sharps disposal container is almost full, you will need to follow your community guidelines for the right way to dispose of your sharps disposal container. There may be state or local laws about how you should throw away used needles and syringes. For more information about safe sharps disposal, and for specific information about sharps disposal in the state that you live in, go to the FDA’s website at: http://www.fda.gov/safesharpsdisposal.

This Instructions for Use has been approved by the U.S. Food and Drug Administration.

sanofi-aventis U.S. LLC
Bridgewater, NJ 08807
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