

# EXENATIDE- exenatide injection

## Amneal Pharmaceuticals LLC

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### HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use EXENATIDE INJECTION safely and effectively. See full prescribing information for EXENATIDE INJECTION.

### EXENATIDE injection, for subcutaneous use

Initial U.S. Approval: 2005

### ----- RECENT MAJOR CHANGES -----

Warnings and Precautions, Pulmonary Aspiration During General Anesthesia or Deep Sedation. (5.10)  
11/2024

### ----- INDICATIONS AND USAGE -----

Exenatide injection is a glucagon-like peptide-1 (GLP-1) receptor agonist indicated as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus. (1, 14)

#### Limitations of Use

- Should not be used for the treatment of type 1 diabetes. (1)
- Has not been studied in patients with a history of pancreatitis. Consider other antidiabetic therapies in patients with a history of pancreatitis. (1)

### ----- DOSAGE AND ADMINISTRATION -----

- Inject subcutaneously within 60 minutes prior to morning and evening meals (or before the two main meals of the day, approximately 6 hours or more apart). (2.1)
- Initiate at 5 mcg per dose twice daily; increase to 10 mcg twice daily after 1 month based on clinical response. (2.1)

### ----- DOSAGE FORMS AND STRENGTHS -----

Exenatide injection is supplied as 250 mcg/mL exenatide in: (3)

- 5 mcg per dose, 60 doses, 1.2 mL single-patient-use prefilled pen
- 10 mcg per dose, 60 doses, 2.4 mL single-patient-use prefilled pen

### ----- CONTRAINDICATIONS -----

- History of severe hypersensitivity to exenatide or any of the excipients in exenatide injection. (4)
- History of drug-induced immune-mediated thrombocytopenia from exenatide products. (4)

### ----- WARNINGS AND PRECAUTIONS -----

- Never share an exenatide injection pen between patients, even if the needle is changed. (5.1)
- Acute Pancreatitis: Post-marketing reports with exenatide, including fatal and non-fatal hemorrhagic or necrotizing pancreatitis. Discontinue exenatide promptly. Exenatide should not be restarted. Consider other antidiabetic therapies in patients with a history of pancreatitis. (5.2)
- Hypoglycemia with Concomitant Use of Insulin Secretagogues or Insulin: Patients taking an insulin secretagogue or insulin may have an increased risk of hypoglycemia, including severe hypoglycemia. Reduction in the dose of insulin secretagogues or insulin may be necessary. (5.3)
- Acute Kidney Injury: Post-marketing reports with exenatide, sometimes requiring hemodialysis and kidney transplantation. Exenatide should *not* be used in patients with severe renal impairment or end-stage renal disease and should be used with caution in patients with renal transplantation. Caution should be applied when initiating exenatide or escalating the dose of exenatide in patients with moderate renal failure. (5.4, 8.6, 12.3)
- Severe Gastrointestinal Disease: Use of exenatide is not recommended in patients with severe gastrointestinal disease (e.g., gastroparesis). (5.5)
- Immunogenicity: Patients may develop antibodies to exenatide. If there is worsening glycemic control or failure to achieve target glycemic control, consider alternative antidiabetic therapy. (5.6)
- Hypersensitivity: Serious hypersensitivity reactions (e.g., anaphylaxis and angioedema) have been reported. Discontinue exenatide and promptly seek medical advice. (5.7)
- Drug-induced Immune-mediated Thrombocytopenia: Serious bleeding which may be fatal has been reported. Discontinue exenatide promptly and avoid re-exposure to exenatide. (5.8)
- Acute Gallbladder Disease: If cholelithiasis or cholecystitis are suspected, gallbladder studies are

indicated. (5.9)

- Pulmonary Aspiration During General Anesthesia or Deep Sedation: Has been reported in patients receiving GLP-1 receptor agonists undergoing elective surgeries or procedures. Instruct patients to inform healthcare providers of any planned surgeries or procedures. (5.10)

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#### **ADVERSE REACTIONS**

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- Most common ( $\geq 5\%$ ) and occurring more frequently than placebo in clinical trials: nausea, hypoglycemia, vomiting, diarrhea, feeling jittery, dizziness, headache, dyspepsia, constipation, asthenia. Nausea usually decreases over time. (5.3, 6)
- Post-marketing reports with exenatide of increased international normalized ratio (INR) with concomitant use of warfarin, sometimes with bleeding. (6.2, 7.3)

**To report SUSPECTED ADVERSE REACTIONS, contact Amneal Pharmaceuticals LLC at 1-877-835-5472 or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).**

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#### **DRUG INTERACTIONS**

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- May impact absorption of orally administered medications. (7.1, 12.3)
- Warfarin: Post-marketing reports of increased INR sometimes associated with bleeding. Monitor INR frequently until stable upon initiation or alteration of exenatide therapy. (6.2, 7.3)

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#### **USE IN SPECIFIC POPULATIONS**

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- Pregnancy: Use during pregnancy only if the potential benefit justifies the risk to the fetus. (8.1)

**See 17 for PATIENT COUNSELING INFORMATION and Medication Guide.**

**Revised: 11/2024**

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# **FULL PRESCRIBING INFORMATION**

## **1 INDICATIONS AND USAGE**

Exenatide injection is indicated as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus [see *Clinical Studies (14)*].

### Limitations of Use

- Exenatide injection is not indicated for use in patients with type 1 diabetes.
- Exenatide injection contains exenatide and should not be used with other products containing the active ingredient exenatide.
- Exenatide injection has not been studied in patients with a history of pancreatitis. Consider other antidiabetic therapies in patients with a history of pancreatitis [see *Warnings and Precautions (5.2)*].

## **2 DOSAGE AND ADMINISTRATION**

### **2.1 Recommended Dosing**

- Initiate exenatide injection at 5 mcg administered subcutaneously twice daily at any time within the 60-minute period before the morning and evening meals (or before the two main meals of the day, approximately 6 hours or more apart). Do not

administer after a meal.

- Based on clinical response, the dose of exenatide injection can be increased to 10 mcg twice daily after 1 month of therapy.
- Administer as a subcutaneous injection in the thigh, abdomen, or upper arm.
- Inspect visually for particulate matter and discoloration. Only use exenatide injection if the solution appears clear, colorless and contains no particles.
- Do not mix exenatide injection with insulin. Do not transfer exenatide injection from the pen to a syringe or a vial.
- If a dose is missed, resume the treatment regimen as prescribed with the next scheduled dose.

### **3 DOSAGE FORMS AND STRENGTHS**

Exenatide Injection, USP is a clear, colorless sterile solution for subcutaneous injection containing 250 mcg/mL exenatide, USP supplied as follows:

- 5 mcg per dose in a 1.2 mL single-patient-use prefilled pen (60 doses)
- 10 mcg per dose in a 2.4 mL single-patient-use prefilled pen (60 doses)

### **4 CONTRAINDICATIONS**

Exenatide injection is contraindicated in patients with:

- A prior severe hypersensitivity reaction to exenatide or to any of the excipients in exenatide injection. Serious hypersensitivity reactions including anaphylaxis and angioedema have been reported with exenatide injection [*see Warnings and Precautions (5.7)*].
- A history of drug-induced immune-mediated thrombocytopenia from exenatide products. Serious bleeding, which may be fatal, from drug-induced immune-mediated thrombocytopenia has been reported with exenatide use [*see Warnings and Precautions (5.8)*].

### **5 WARNINGS AND PRECAUTIONS**

#### **5.1 Never Share an Exenatide Injection Pen Between Patients**

Exenatide injection pens must never be shared between patients, even if the needle is changed. Pen-sharing poses a risk for transmission of blood-borne pathogens.

#### **5.2 Acute Pancreatitis**

Based on post-marketing data, exenatide has been associated with acute pancreatitis, including fatal and non-fatal hemorrhagic or necrotizing pancreatitis. After initiation of exenatide, and after dose increases, observe patients carefully for signs and symptoms of pancreatitis (including persistent severe abdominal pain, sometimes radiating to the back, which may or may not be accompanied by vomiting). If pancreatitis is suspected, exenatide should promptly be discontinued and appropriate management should be initiated. If pancreatitis is confirmed, exenatide should not be restarted. Consider antidiabetic therapies other than exenatide in patients with a history of pancreatitis.

#### **5.3 Hypoglycemia with Concomitant Use of Insulin Secretagogues or Insulin**

Patients receiving exenatide in combination with an insulin secretagogue (e.g., sulfonylurea) or insulin may have an increased risk of hypoglycemia including severe hypoglycemia [see *Adverse Reactions (6)* and *Drug Interactions (7.2)*].

The risk of hypoglycemia may be lowered by a reduction in the dose of sulfonylurea (or other concomitantly administered insulin secretagogue) or insulin. Inform patients using these concomitant medications of the risk of hypoglycemia and educate them on the signs and symptoms of hypoglycemia.

#### **5.4 Acute Kidney Injury**

There have been post-marketing reports of altered renal function with exenatide, including increased serum creatinine, renal impairment, worsened chronic renal failure and acute renal failure, sometimes requiring hemodialysis or kidney transplantation. Some of these events occurred in patients receiving one or more pharmacologic agents known to affect renal function or hydration status, such as angiotensin converting enzyme inhibitors, nonsteroidal anti-inflammatory drugs, or diuretics. Some events occurred in patients who had been experiencing nausea, vomiting, or diarrhea, with or without dehydration. Reversibility of altered renal function has been observed in many cases with supportive treatment and discontinuation of potentially causative agents, including exenatide. Exenatide has not been found to be directly nephrotoxic in preclinical or clinical studies.

Exenatide is not recommended in patients with severe renal impairment (creatinine clearance < 30 mL/min) or end-stage renal disease and should be used with caution in patients with renal transplantation [see *Use in Specific Populations (8.6)*]. Because exenatide may induce nausea and vomiting with transient hypovolemia, treatment may worsen renal function. Caution should be applied when initiating or escalating doses of exenatide from 5 mcg to 10 mcg in patients with moderate renal impairment (creatinine clearance 30 to 50 mL/min).

#### **5.5 Gastrointestinal Disease**

Exenatide has not been studied in patients with severe gastrointestinal disease, including gastroparesis. Because exenatide is commonly associated with gastrointestinal adverse reactions, including nausea, vomiting and diarrhea, the use of exenatide is not recommended in patients with severe gastrointestinal disease.

#### **5.6 Immunogenicity**

Patients may develop antibodies to exenatide following treatment with exenatide. Antibody levels were measured in 90% of subjects in the 30-week, 24-week, and 16-week placebo-controlled studies and the 30-week comparator-controlled study of exenatide. In 3%, 4%, 1% and 1% of these patients, respectively, antibody formation was associated with an attenuated glycemic response. If there is worsening glycemic control or failure to achieve targeted glycemic control, alternative antidiabetic therapy should be considered [see *Adverse Reactions (6.1)*].

#### **5.7 Hypersensitivity**

There have been post-marketing reports of serious hypersensitivity reactions (e.g., anaphylaxis and angioedema) in patients treated with exenatide. If a hypersensitivity reaction occurs, the patient should discontinue exenatide and other suspect

medications and promptly seek medical advice. Inform and closely monitor patients with a history of anaphylaxis or angioedema with another GLP-1 receptor agonist for allergic reactions, because it is unknown whether such patients will be predisposed to anaphylaxis with exenatide [see *Adverse Reactions (6.2)*].

### **5.8 Drug-Induced Thrombocytopenia**

Serious bleeding, which may be fatal, from drug-induced immune-mediated thrombocytopenia has been reported in the post-marketing setting with exenatide use. Drug-induced thrombocytopenia is an immune-mediated reaction, with exenatide-dependent anti-platelet antibodies. In the presence of exenatide, these antibodies cause platelet destruction. If drug-induced thrombocytopenia is suspected, discontinue exenatide immediately and do not re-expose the patient to exenatide [see *Adverse Reactions (6.2)*].

### **5.9 Acute Gallbladder Disease**

Acute events of gallbladder disease such as cholelithiasis or cholecystitis have been reported in GLP-1 receptor agonist trials and post-marketing. In a clinical study with exenatide, 1.9% of exenatide-treated patients and 1.4% of placebo-treated patients reported an acute event of gallbladder disease, such as cholelithiasis or cholecystitis. If cholelithiasis is suspected, gallbladder studies and appropriate clinical follow-up are indicated.

### **5.10 Pulmonary Aspiration During General Anesthesia or Deep Sedation**

Exenatide delays gastric emptying [see *Clinical Pharmacology (12.2)*]. There have been rare post-marketing reports of pulmonary aspiration in patients receiving GLP-1 receptor agonists undergoing elective surgeries or procedures requiring general anesthesia or deep sedation who had residual gastric contents despite reported adherence to preoperative fasting recommendations.

Available data are insufficient to inform recommendations to mitigate the risk of pulmonary aspiration during general anesthesia or deep sedation in patients taking exenatide, including whether modifying preoperative fasting recommendations or temporarily discontinuing exenatide could reduce the incidence of retained gastric contents. Instruct patients to inform healthcare providers prior to any planned surgeries or procedures if they are taking exenatide.

## **6 ADVERSE REACTIONS**

The following serious adverse reactions are described below or elsewhere in the prescribing information:

- Never Share an Exenatide Pen Between Patients [see *Warnings and Precautions (5.1)*]
- Acute Pancreatitis [see *Warnings and Precautions (5.2)*]
- Hypoglycemia with Concomitant Use of Insulin Secretagogues or Insulin [see *Warnings and Precautions (5.3)*]
- Acute Kidney Injury [see *Warnings and Precautions (5.4)*]
- Gastrointestinal Disease [see *Warnings and Precautions (5.5)*]
- Immunogenicity [see *Warnings and Precautions (5.6)*]
- Hypersensitivity [see *Warnings and Precautions (5.7)*]

- Drug-Induced Thrombocytopenia [see Warnings and Precautions (5.8)]
- Acute Gallbladder Disease [see Warnings and Precautions (5.9)]
- Pulmonary Aspiration During General Anesthesia or Deep Sedation [see Warnings and Precautions (5.10)]

## 6.1 Clinical Trial 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.

### Hypoglycemia

Table 1 summarizes the incidence and rate of hypoglycemia with exenatide in six placebo-controlled clinical trials.

**Table 1: Incidence (%) and Rate of Hypoglycemia when Exenatide was used as Monotherapy or with Concomitant Antidiabetic Therapy in Six Placebo-Controlled Clinical Trials\***

	Placebo BID	Exenatide 5 mcg BID	Exenatide 10 mcg BID
<b>Monotherapy (24 Weeks)</b>			
N	77	77	78
% Overall	1.3%	5.2%	3.8%
Rate (episodes/patient-year)	0.03	0.21	0.52
% Severe	0.0%	0.0%	0.0%
<b>With Metformin (30 Weeks)</b>			
N	113	110	113
% Overall	5.3%	4.5%	5.3%
Rate (episodes/patient-year)	0.12	0.13	0.12
% Severe	0.0%	0.0%	0.0%
<b>With a Sulfonylurea (30 Weeks)</b>			
N	123	125	129
% Overall	3.3%	14.4%	35.7%
Rate (episodes/patient-year)	0.07	0.64	1.61
% Severe	0.0%	0.0%	0.0%
<b>With Metformin and a Sulfonylurea (30 Weeks)</b>			
N	247	245	241
% Overall	12.6%	19.2%	27.8%
Rate (episodes/patient-year)	0.58	0.78	1.71
% Severe	0.0%	0.4%	0.0%
<b>With a Thiazolidinedione (16 Weeks)</b>			
N	112	not evaluated	121
% Overall	7.1%	not evaluated	10.7%
Rate (episodes/patient-years)	0.56	not evaluated	0.98
% Severe	0.0%	not evaluated	0.0%
<b>With Insulin Glargine with or without Metformin and/or Thiazolidinedione (30 Weeks)<sup>†</sup></b>			
N	122	not evaluated	137
% Overall	29.5%	not evaluated	24.8%

Rate (episodes/patient-years)	1.58	not evaluated	1.61
% Severe	0.8%	not evaluated	0.0%
<p>* A hypoglycemic episode was recorded if a patient reported symptoms of hypoglycemia with or without a blood glucose value consistent with hypoglycemia. Severe hypoglycemia was defined as an event with symptoms consistent with hypoglycemia requiring the assistance of another person and associated with either a documented blood glucose value &lt; 54 mg/dL or prompt recovery after treatment for hypoglycemia.</p> <p>† When exenatide was initiated in combination with insulin glargine, the dose of insulin glargine was decreased by 20% in patients with an HbA<sub>1c</sub> ≤ 8.0% to minimize the risk of hypoglycemia. See Table 9 for insulin dose titration algorithm.</p> <p>N = number of Intent-to-Treat subjects in each treatment group.</p>			

## Immunogenicity

Antibodies were assessed in 90% of subjects in the 30-week, 24-week, and 16-week studies of exenatide. In the 30-week controlled trials of exenatide add-on to metformin and/or sulfonylurea, antibodies were assessed at 2- to 6-week intervals. The mean antibody titer peaked at Week 6 and was reduced by 55% by Week 30. Three hundred and sixty patients (38%) had low titer antibodies (< 625) to exenatide at 30 weeks. The level of glycemic control (HbA<sub>1c</sub>) in these patients was generally comparable to that observed in the 534 patients (56%) without antibody titers. An additional 59 patients (6%) had higher titer antibodies (≥ 625) at 30 weeks. Of these patients, 32 (3% overall) had an attenuated glycemic response to exenatide; the remaining 27 (3% overall) had a glycemic response comparable to that of patients without antibodies.

In the 16-week trial of exenatide add-on to thiazolidinediones, with or without metformin, 36 patients (31%) had low titer antibodies to exenatide at 16 weeks. The level of glycemic control in these patients was generally comparable to that observed in the 69 patients (60%) without antibody titer. An additional 10 patients (9%) had higher titer antibodies at 16 weeks. Of these patients, 4 (4% overall) had an attenuated glycemic response to exenatide; the remaining 6 (5% overall) had a glycemic response comparable to that of patients without antibodies.

In the 24-week trial of exenatide used as monotherapy, 40 patients (28%) had low titer antibodies to exenatide at 24 weeks. The level of glycemic control in these patients was generally comparable to that observed in the 101 patients (70%) without antibody titers. An additional 3 patients (2%) had higher titer antibodies at 24 weeks. Of these patients, 1 (1% overall) had an attenuated glycemic response to exenatide; the remaining 2 (1% overall) had a glycemic response comparable to that of patients without antibodies.

Antibodies to exenatide were not assessed in the 30-week placebo-controlled trial of exenatide used in combination with insulin glargine.

In the 30-week comparator-controlled trial of exenatide used in combination with insulin glargine and metformin, 60 patients (20%) had low titer antibodies to exenatide at 30 weeks. The level of glycemic control in these patients was generally comparable to that observed in the 234 patients (77%) without antibody titers. An additional 10 patients (3%) had higher titer antibodies at 30 weeks. Of these patients, 2 (1% overall) had an attenuated glycemic response to exenatide; the remaining 8 (3% overall) had a glycemic response comparable to that of patients without antibodies.

Two hundred and ten patients with antibodies to exenatide in the exenatide clinical trials



were tested for the presence of cross-reactive antibodies to GLP-1 and/or glucagon. No treatment-emergent cross-reactive antibodies were observed across the range of titers.

## Other Adverse Reactions

### ***Monotherapy***

For the 24-week placebo-controlled study of exenatide used as a monotherapy, Table 2 summarizes adverse reactions (excluding hypoglycemia) occurring with an incidence  $\geq 2\%$  and occurring more frequently in exenatide-treated patients compared with placebo-treated patients.

**Table 2: Treatment-Emergent Adverse Reactions  $\geq 2\%$  Incidence with Exenatide used as Monotherapy (excluding Hypoglycemia)\***

<b>Monotherapy</b>	<b>Placebo BID N=77 %</b>	<b>All Exenatide BID N=155 %</b>
Nausea	0	8
Vomiting	0	4
Dyspepsia	0	3
* In a 24-week placebo-controlled trial. BID = twice daily.		

Adverse reactions reported in  $\geq 1.0\%$  to  $< 2.0\%$  of patients receiving exenatide and reported more frequently than with placebo included decreased appetite, diarrhea and dizziness. The most frequently reported adverse reaction associated with exenatide, nausea, occurred in a dose-dependent fashion.

Two of the 155 patients treated with exenatide withdrew due to adverse reactions of headache and nausea. No placebo-treated patients withdrew due to adverse reactions.

### *Cholelithiasis and cholecystitis*

In a clinical study with exenatide, 1.9% of exenatide-treated patients and 1.4% of placebo-treated patients reported an acute event of gallbladder disease, such as cholelithiasis or cholecystitis.

### ***Combination Therapy***

#### Add-On to Metformin and/or Sulfonylurea

In the three 30-week controlled trials of exenatide add-on to metformin and/or sulfonylurea, adverse reactions (excluding hypoglycemia) with an incidence  $\geq 2\%$  and occurring more frequently in exenatide-treated patients compared with placebo-treated patients are summarized in Table 3.

**Table 3: Treatment-Emergent Adverse Reactions  $\geq 2\%$  Incidence and Greater Incidence with Exenatide Treatment used with Metformin and/or a Sulfonylurea (excluding Hypoglycemia)\***

	<b>Placebo BID N=483 %</b>	<b>All Exenatide BID N=963 %</b>

Nausea	18	44
Vomiting	4	13
Diarrhea	6	13
Feeling Jittery	4	9
Dizziness	6	9
Headache	6	9
Dyspepsia	3	6
Asthenia	2	4
Gastroesophageal Reflux Disease	1	3
Hyperhidrosis	1	3
* In three 30-week placebo-controlled clinical trials. BID = twice daily.		

Adverse reactions reported in  $\geq 1.0\%$  to  $< 2.0\%$  of patients receiving exenatide and reported more frequently than with placebo included decreased appetite. Nausea was the most frequently reported adverse reaction and occurred in a dose-dependent fashion. With continued therapy, the frequency and severity decreased over time in most of the patients who initially experienced nausea. Patients in the long-term uncontrolled open-label extension studies at 52 weeks reported no new types of adverse reactions than those observed in the 30-week controlled trials.

The most common adverse reactions leading to withdrawal for exenatide-treated patients were nausea (3% of patients) and vomiting (1%). For placebo-treated patients,  $< 1\%$  withdrew due to nausea and none due to vomiting.

#### Add-On to Thiazolidinedione with or without Metformin

For the 16-week placebo-controlled study of exenatide add-on to a thiazolidinedione, with or without metformin, Table 4 summarizes the adverse reactions (excluding hypoglycemia) with an incidence of  $\geq 2\%$  and occurring more frequently in exenatide-treated patients compared with placebo-treated patients.

**Table 4: Treatment-Emergent Adverse Reactions  $\geq 2\%$  Incidence with Exenatide used with a Thiazolidinedione (TZD), with or without Metformin (MET) (excluding Hypoglycemia)\***

<b>With a TZD or TZD/MET</b>	<b>Placebo N=112 %</b>	<b>All Exenatide BID N=121 %</b>
Nausea	15	40
Vomiting	1	13
Dyspepsia	1	7
Diarrhea	3	6
Gastroesophageal Reflux Disease	0	3
* In a 16-week placebo-controlled clinical trial. BID = twice daily.		

Adverse reactions reported in  $\geq 1.0\%$  to  $< 2.0\%$  of patients receiving exenatide and reported more frequently than with placebo included decreased appetite. Chills (n=4) and injection-site reactions (n=2) occurred only in exenatide-treated patients. The two patients who reported an injection-site reaction had high titers of antibodies to

exenatide. Two serious adverse events (chest pain and chronic hypersensitivity pneumonitis) were reported in the exenatide arm. No serious adverse events were reported in the placebo arm.

The most common adverse reactions leading to withdrawal for exenatide-treated patients were nausea (9%) and vomiting (5%). For placebo-treated patients, < 1% withdrew due to nausea.

#### Add-On to Insulin Glargine with or without Metformin and/or Thiazolidinedione (Placebo-Controlled)

For the 30-week placebo-controlled study of exenatide as add-on to insulin glargine with or without oral antihyperglycemic medications, Table 5 summarizes adverse reactions (excluding hypoglycemia) occurring with an incidence  $\geq 2\%$  and occurring more frequently in exenatide-treated patients compared with placebo-treated patients.

**Table 5: Treatment-Emergent Adverse Reactions  $\geq 2\%$  Incidence with Exenatide used with Insulin Glargine with or without Oral Antihyperglycemic Medications (excluding Hypoglycemia)\***

<b>With Insulin Glargine</b>	<b>Placebo N=122 %</b>	<b>All Exenatide BID N=137 %</b>
Nausea	8	41
Vomiting	4	18
Diarrhea	8	18
Headache	4	14
Constipation	2	10
Dyspepsia	2	7
Asthenia	1	5
Abdominal Distension	1	4
Decreased Appetite	0	3
Flatulence	1	2
Gastroesophageal Reflux Disease	1	2
* In a 30-week placebo-controlled clinical trial. BID = twice daily.		

The most frequently reported adverse reactions leading to withdrawal for exenatide-treated patients were nausea (5.1%) and vomiting (2.9%). No placebo-treated patients withdrew due to nausea or vomiting.

## **6.2 Post-marketing Experience**

The following additional adverse reactions have been reported during post-approval use of exenatide or other exenatide formulations. Because these events are reported voluntarily from a population of uncertain size, it is generally not possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

*Allergy/Hypersensitivity:* injection-site reactions, generalized pruritus and/or urticaria, macular or papular rash, angioedema, anaphylactic reaction.

*Blood and Lymphatic Systems:* drug-induced thrombocytopenia.

*Drug Interactions:* International normalized ratio (INR) increased with concomitant warfarin use sometimes associated with bleeding [see *Drug Interactions (7.3)*].

*Gastrointestinal:* nausea, vomiting and/or diarrhea resulting in dehydration; abdominal distension, abdominal pain, eructation, constipation, flatulence, ileus, acute pancreatitis, hemorrhagic and necrotizing pancreatitis sometimes resulting in death [see *Indications and Usage (1)*].

*Hepatobiliary:* cholecystitis, cholelithiasis requiring cholecystectomy.

*Metabolic:* Severe hypoglycemia with concomitant use of sulfonylurea or insulin.

*Neurologic:* dysgeusia; somnolence.

*Pulmonary:* Pulmonary aspiration has occurred in patients receiving GLP-1 receptor agonists undergoing elective surgeries or procedures requiring general anesthesia or deep sedation.

*Renal and Urinary Disorders:* altered renal function, including increased serum creatinine, renal impairment, worsened chronic renal failure or acute renal failure (sometimes requiring hemodialysis), kidney transplant and kidney transplant dysfunction.

*Skin and Subcutaneous Tissue Disorders:* alopecia.

## **7 DRUG INTERACTIONS**

### **7.1 Orally Administered Drugs**

The effect of exenatide to slow gastric emptying can reduce the extent and rate of absorption of orally administered drugs. Exenatide should be used with caution in patients receiving oral medications that have narrow therapeutic index or require rapid gastrointestinal absorption [see *Adverse Reactions (6.2)*]. For oral medications that are dependent on threshold concentrations for efficacy, such as contraceptives and antibiotics, patients should be advised to take those drugs at least 1 hour before exenatide injection. If such drugs are to be administered with food, patients should be advised to take them with a meal or snack when exenatide is not administered [see *Clinical Pharmacology (12.3)*].

### **7.2 Concomitant Use with an Insulin Secretagogue (e.g., Sulfonylurea) or with Insulin**

When initiating exenatide, consider reducing the dose of concomitantly administered insulin secretagogues (such as sulfonylureas) or insulin to reduce the risk of hypoglycemia [see *Warnings and Precautions (5.3)* and *Adverse Reactions (6)*].

### **7.3 Warfarin**

There are post-marketing reports of increased INR sometimes associated with bleeding, with concomitant use of warfarin and exenatide [see *Adverse Reactions (6.2)*]. In a drug interaction study, exenatide did not have a significant effect on INR [see *Clinical Pharmacology (12.3)*]. In patients taking warfarin, prothrombin time should be monitored more frequently after initiation or alteration of exenatide therapy. Once a stable prothrombin time has been documented, prothrombin times can be monitored at the intervals usually recommended for patients on warfarin.

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

#### Risk Summary

Limited data with exenatide in pregnant women are not sufficient to determine a drug-associated risk for major birth defects or miscarriage. There are risks to the mother and fetus associated with poorly controlled diabetes in pregnancy (*see Clinical Considerations*). Based on animal reproduction studies, there may be risks to the fetus from exposure to exenatide during pregnancy. Exenatide should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Animal reproduction studies identified increased adverse fetal and neonatal outcomes from exposure to exenatide during pregnancy and lactation in association with maternal effects. In mice, exenatide administered during gestation and lactation caused increased neonatal deaths at systemic exposure 3-times the human exposure resulting from the maximum recommended human dose (MRHD) of 20 mcg/day for exenatide (*see Data*).

The estimated background risk of major birth defects is 6% to 10% in women with pre-gestational diabetes with an  $HbA_{1c} > 7$  and has been reported to be as high as 20% to 25% in women with  $HbA_{1c} > 10$ . The estimated background risk of miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2% to 4% and 15% to 20%, respectively.

#### Clinical Considerations

##### *Disease-associated maternal and/or embryofetal risk*

Poorly controlled diabetes in pregnancy increases the maternal risk for diabetic ketoacidosis, preeclampsia, spontaneous abortions, preterm delivery, and delivery complications. Poorly controlled diabetes increases the fetal risk for major birth defects, stillbirth, and macrosomia related morbidity.

#### Data

##### *Animal Data*

In studies evaluating reproduction and development in pregnant mice and rabbits, maternal animals were administered exenatide, the active ingredient in exenatide injection, by subcutaneous injection twice a day.

In pregnant mice given 6, 68, 460, or 760 mcg/kg/day exenatide during fetal organogenesis, skeletal variations associated with slowed fetal growth, including changes in number of rib pairs or vertebral ossifications sites, and wavy ribs were observed at 760 mcg/kg/day, a dose that produced maternal toxicity and yielded systemic exposure 390-times the human exposure resulting from the MRHD of exenatide based on AUC comparison.

In pregnant rabbits given 0.2, 2, 22, 156, or 260 mcg/kg/day exenatide during fetal organogenesis, irregular fetal skeletal ossifications were observed at 2 mcg/kg/day, a dose yielding systemic exposure up to 12-times the human exposure from the MRHD of exenatide based on AUC comparison.

In maternal mice given 6, 68, or 760 mcg/kg/day exenatide from gestation day 6 through lactation day 20 (weaning), an increased number of neonatal deaths was observed on postpartum days 2 to 4 in dams given 6 mcg/kg/day, a dose yielding a systemic exposure 3-times the human exposure from the MRHD of exenatide based on AUC comparison.

## **8.2 Lactation**

### Risk Summary

There is no information regarding the presence of exenatide, in human milk, the effects of exenatide on the breastfed infant, or the effects of exenatide on milk production. Exenatide was present in the milk of lactating mice. However, due to species-specific differences in lactation physiology, the clinical relevance of these data is not clear (see *Data*). The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for exenatide and any potential adverse effects on the breastfed child from exenatide or from the underlying maternal condition.

### Data

In lactating mice subcutaneously injected twice a day with exenatide, the concentration of exenatide in milk was up to 2.5% of the concentration in maternal plasma.

## **8.4 Pediatric Use**

The safety and effectiveness of exenatide have not been established in pediatric patients.

Effectiveness of exenatide was not demonstrated in a randomized, double-blind, placebo-controlled study conducted in 120 pediatric patients (78 received exenatide and 42 received placebo) aged 10 to 17 years with type 2 diabetes mellitus.

## **8.5 Geriatric Use**

Population pharmacokinetic analysis of patients ranging from 22 to 73 years of age suggests that age does not influence the pharmacokinetic properties of exenatide [see *Clinical Pharmacology (12.3)*]. Exenatide was studied in 282 patients 65 years of age or older and in 16 patients 75 years of age or older. No differences in safety or effectiveness were observed between these patients and younger patients. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection in the elderly based on renal function.

## **8.6 Renal Impairment**

Exenatide is not recommended for use in patients with end-stage renal disease or severe renal impairment (creatinine clearance < 30 mL/min) and should be used with caution in patients with renal transplantation. In patients with end-stage renal disease receiving dialysis, single doses of exenatide 5 mcg were not well-tolerated due to gastrointestinal side effects. No dosage adjustment of exenatide is required in patients with mild renal impairment (creatinine clearance 50 to 80 mL/min). Caution should be applied when initiating or escalating doses of exenatide from 5 mcg to 10 mcg in patients with moderate renal impairment (creatinine clearance 30 to 50 mL/min) [see *Clinical Pharmacology (12.3)*].

## 8.7 Hepatic Impairment

No pharmacokinetic study has been performed in patients with a diagnosis of acute or chronic hepatic impairment. Because exenatide is cleared primarily by the kidney, hepatic dysfunction is not expected to affect blood concentrations of exenatide [see *Clinical Pharmacology* (12.3)].

## 10 OVERDOSAGE

In a clinical study of exenatide, three patients with type 2 diabetes each experienced a single overdose of 100 mcg SC (10-times the maximum recommended dose). Effects of the overdoses included severe nausea, severe vomiting and rapidly declining blood glucose concentrations. One of the three patients experienced severe hypoglycemia requiring parenteral glucose administration. The three patients recovered without complication. In the event of overdose, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms.

## 11 DESCRIPTION

Exenatide is a synthetic peptide, glucagon-like peptide-1 (GLP-1) receptor agonist, that was originally identified in the lizard *Heloderma suspectum*.

Exenatide is a 39-amino acid peptide amide. Exenatide has the empirical formula  $C_{184}H_{282}N_{50}O_{60}S$  and molecular weight of 4186.6 Daltons. The amino acid sequence for exenatide is shown below.

H-His-Gly-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Leu-Ser-Lys-Gln-Met-Glu-Glu-Glu-Ala-Val-Arg-Leu-Phe-Ile-Glu-Trp-Leu-Lys-Asn-Gly-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-NH<sub>2</sub>

Exenatide injection, USP is supplied for subcutaneous administration as a sterile, preserved isotonic solution in a glass cartridge that has been assembled in a pen-injector (pen). Each milliliter (mL) contains 250 micrograms (mcg) synthetic exenatide, USP, 2.2 mg metacresol as an antimicrobial preservative, mannitol as a tonicity-adjusting agent, and glacial acetic acid and sodium acetate trihydrate in water for injection as a buffering solution at pH 4.5. Two prefilled pens are available to deliver unit doses of 5 mcg or 10 mcg. Each prefilled pen will deliver 60 doses to provide for 30 days of twice daily administration (BID).

## 12 CLINICAL PHARMACOLOGY

### 12.1 Mechanism of Action

Incretins, such as glucagon-like peptide-1 (GLP-1), enhance glucose-dependent insulin secretion and exhibit other antihyperglycemic actions following their release into the circulation from the gut. Exenatide is a GLP-1 receptor agonist that enhances glucose-dependent insulin secretion by the pancreatic beta-cell, suppresses inappropriately elevated glucagon secretion, and slows gastric emptying.

The amino acid sequence of exenatide partially overlaps that of human GLP-1. Exenatide has been shown to bind and activate the human GLP-1 receptor *in vitro*. This leads to an increase in both glucose-dependent synthesis of insulin, and *in vivo* secretion of insulin

from pancreatic beta cells, by mechanisms involving cyclic AMP and/or other intracellular signaling pathways.

Exenatide improves glycemic control by reducing fasting and postprandial glucose concentrations in patients with type 2 diabetes through the actions described below.

## 12.2 Pharmacodynamics

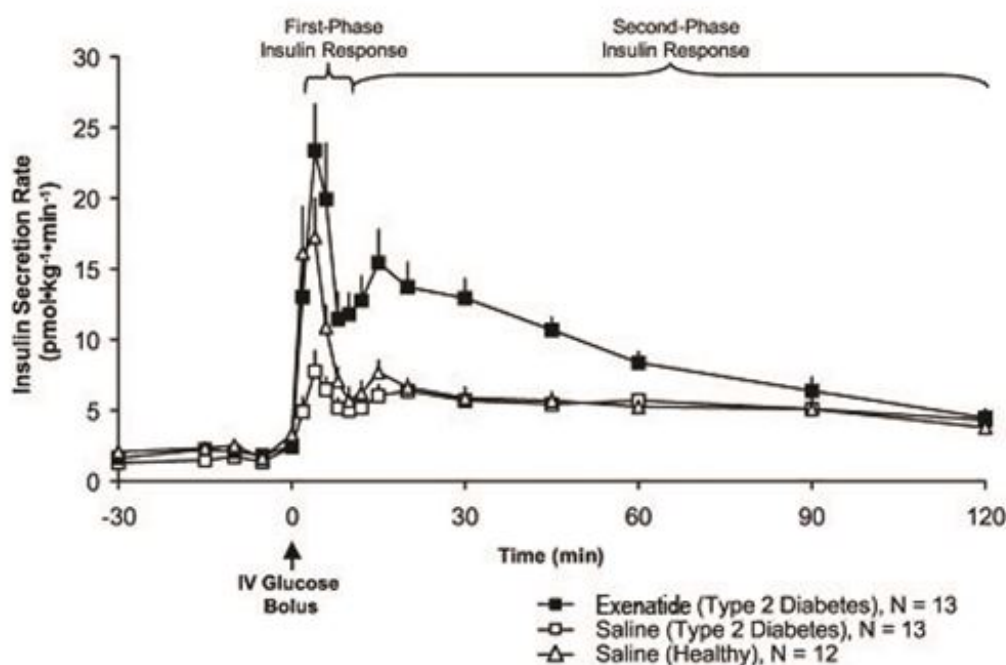
### Glucose-Dependent Insulin Secretion

Exenatide has acute effects on pancreatic beta-cell responsiveness to glucose leading to insulin release predominantly in the presence of elevated glucose concentrations. This insulin secretion subsides as blood glucose concentrations decrease and approach euglycemia. However, exenatide does not impair the normal glucagon response to hypoglycemia.

### First-Phase Insulin Response

In healthy individuals, robust insulin secretion occurs during the first 10 minutes following intravenous (IV) glucose administration. This secretion, known as the “first-phase insulin response,” is characteristically absent in patients with type 2 diabetes. The loss of the first-phase insulin response is an early beta-cell defect in type 2 diabetes. Administration of exenatide at therapeutic plasma concentrations restored first-phase insulin response to an IV bolus of glucose in patients with type 2 diabetes (Figure 1). Both first-phase insulin secretion and second-phase insulin secretion were significantly increased in patients with type 2 diabetes treated with exenatide compared with saline ( $p < 0.001$  for both).

**Figure 1: Mean (+SEM) Insulin Secretion Rate during Infusion of Exenatide or Saline in Patients with Type 2 Diabetes and during Infusion of Saline in Healthy Subjects**



Patients received an IV infusion of insulin for 6.5 h (discontinued at time [t] = -30 min) to normalize plasma glucose concentrations and a continuous IV infusion of either exenatide or saline for 5 h beginning 3 h prior to an IV bolus of glucose (0.3 g/kg over 30 sec) at t = 0 min.



## Glucagon Secretion

In patients with type 2 diabetes, exenatide moderates glucagon secretion and lowers serum glucagon concentrations during periods of hyperglycemia. Lower glucagon concentrations lead to decreased hepatic glucose output and decreased insulin demand.

## Gastric Emptying

Exenatide slows gastric emptying, thereby reducing the rate at which meal-derived glucose appears in the circulation.

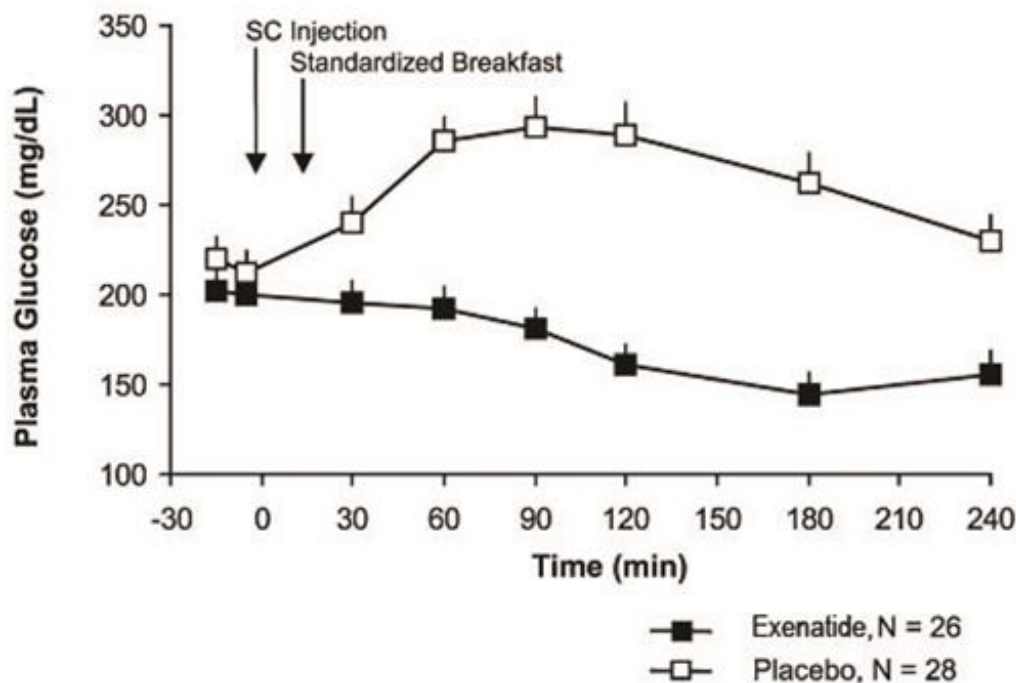
## Food Intake

In both animals and humans, administration of exenatide has been shown to reduce food intake.

## Postprandial Glucose

In patients with type 2 diabetes, exenatide reduces postprandial plasma glucose concentrations (Figure 2).

**Figure 2: Mean (+SEM) Postprandial Plasma Glucose Concentrations on Day 1 of Exenatide<sup>a</sup> Treatment in Patients with Type 2 Diabetes Treated with Metformin, a Sulfonylurea, or Both (N=54)**



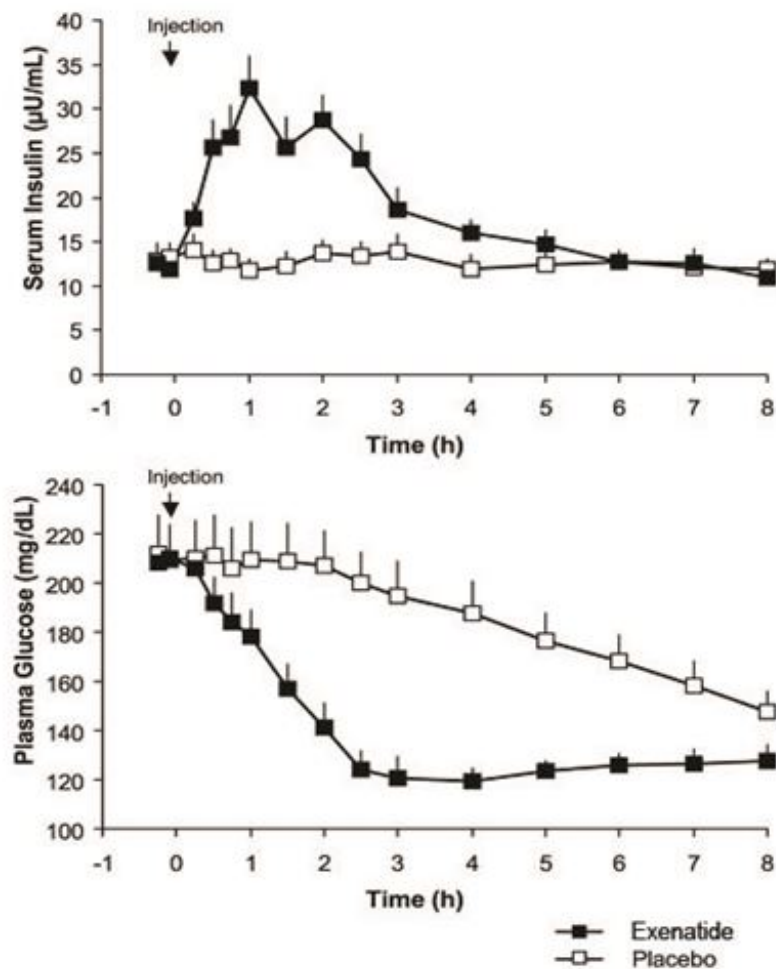
<sup>a</sup>Mean dose (7.8 mcg based on body weight) was administered by subcutaneous (SC) injection.

## Fasting Glucose

In a single-dose crossover study in patients with type 2 diabetes and fasting hyperglycemia, immediate insulin release followed injection of exenatide. Plasma glucose concentrations were significantly reduced with exenatide compared with placebo (Figure 3).

**Figure 3: Mean (+SEM) Serum Insulin and Plasma Glucose Concentrations Following a One-Time Injection of Exenatide<sup>a</sup> or Placebo in Fasting Patients**

## with Type 2 Diabetes (N=12)



\* Exenatide administration was based on body weight at baseline, mean dose was 9.1 mcg.

## Cardiac Electrophysiology

The effect of exenatide 10 mcg subcutaneously on QTc interval was evaluated in a randomized, placebo-, and active-controlled (moxifloxacin 400 mg) crossover thorough QTc study in 62 healthy subjects. In this study with demonstrated ability to detect small effects, the upper bound of the 90% confidence interval for the largest placebo-adjusted, baseline-corrected QTc was below 10 msec. Thus, exenatide (10 mcg single-dose) was not associated with clinically meaningful prolongation of the QTc interval.

## 12.3 Pharmacokinetics

### Absorption

Following SC administration to patients with type 2 diabetes, exenatide reaches median peak plasma concentrations in 2.1 hours. The mean peak exenatide concentration ( $C_{max}$ ) was 211 pg/mL and overall mean area under the time-concentration curve ( $AUC_{0-inf}$ ) was 1,036 pg•h/mL following SC administration of a 10-mcg dose of exenatide. Exenatide exposure (AUC) increased proportionally over the therapeutic dose range of 5 mcg to 10 mcg. The  $C_{max}$  values increased less than proportionally over the same range. Similar exposure is achieved with SC administration of exenatide in the abdomen, thigh, or upper arm.

### Distribution

The mean apparent volume of distribution of exenatide following SC administration of a single-dose of exenatide is 28.3 L.

## **Metabolism and Elimination**

Nonclinical studies have shown that exenatide is predominantly eliminated by glomerular filtration with subsequent proteolytic degradation. The mean apparent clearance of exenatide in humans is 9.1 L/hour and the mean terminal half-life is 2.4 hours. These pharmacokinetic characteristics of exenatide are independent of the dose. In most individuals, exenatide concentrations are measurable for approximately 10 hours post-dose.

## **Drug Interactions**

### ***Acetaminophen***

When 1,000 mg acetaminophen elixir was given with 10 mcg exenatide (0 hour) and 1 hour, 2 hours and 4 hours after exenatide injection, acetaminophen AUCs were decreased by 21%, 23%, 24% and 14%, respectively;  $C_{max}$  was decreased by 37%, 56%, 54% and 41%, respectively;  $T_{max}$  was increased from 0.6 hour in the control period to 0.9 hour, 4.2 hours, 3.3 hours and 1.6 hours, respectively. Acetaminophen AUC,  $C_{max}$  and  $T_{max}$  were not significantly changed when acetaminophen was given 1 hour before exenatide injection.

### ***Digoxin***

Administration of repeated doses of exenatide (10 mcg BID) 30 minutes before oral digoxin

(0.25 mg once daily) decreased the  $C_{max}$  of digoxin by 17% and delayed the  $T_{max}$  of digoxin by approximately 2.5 hours; however, the overall steady-state pharmacokinetic exposure (e.g., AUC) of digoxin was not changed.

### ***Lovastatin***

Administration of exenatide (10 mcg BID) 30 minutes before a single oral dose of lovastatin (40 mg) decreased the AUC and  $C_{max}$  of lovastatin by approximately 40% and 28%, respectively, and delayed the  $T_{max}$  by about 4 hours compared with lovastatin administered alone. In the 30-week controlled clinical trials of exenatide, the use of exenatide in patients already receiving HMG CoA reductase inhibitors was not associated with consistent changes in lipid profiles compared to baseline.

### ***Lisinopril***

In patients with mild to moderate hypertension stabilized on lisinopril (5 mg/day to 20 mg/day), exenatide (10 mcg BID) did not alter steady-state  $C_{max}$  or AUC of lisinopril. Lisinopril steady-state  $T_{max}$  was delayed by 2 hours. There were no changes in 24-hour mean systolic and diastolic blood pressure.

### ***Oral Contraceptives***

The effect of exenatide (10 mcg BID) on single and on multiple-doses of a combination oral contraceptive (30 mcg ethinyl estradiol plus 150 mcg levonorgestrel) was studied in healthy female subjects. Repeated daily doses of the oral contraceptive (OC) given 30 minutes after exenatide administration decreased the  $C_{max}$  of ethinyl estradiol and levonorgestrel by 45% and 27%, respectively and delayed the  $T_{max}$  of ethinyl estradiol and levonorgestrel by 3.0 hours and 3.5 hours, respectively, as compared to the oral

contraceptive administered alone. Administration of repeated daily doses of the OC one hour prior to exenatide administration decreased the mean  $C_{\max}$  of ethinyl estradiol by 15% but the mean  $C_{\max}$  of levonorgestrel was not significantly changed as compared to when the OC was given alone. Exenatide did not alter the mean trough concentrations of levonorgestrel after repeated daily dosing of the oral contraceptive for both regimens. However, the mean trough concentration of ethinyl estradiol was increased by 20% when the OC was administered 30 minutes after exenatide administration injection as compared to when the OC was given alone. The effect of exenatide on OC pharmacokinetics is confounded by the possible food effect on OC in this study. Therefore, OC products should be administered at least one hour prior to exenatide injection.

### **Warfarin**

Administration of warfarin (25 mg) 35 minutes after repeated doses of exenatide (5 mcg BID on Days 1 to 2 and 10 mcg BID on Days 3 to 9) in healthy volunteers delayed warfarin  $T_{\max}$  by approximately 2 hours. No clinically relevant effects on  $C_{\max}$  or AUC of S- and R-enantiomers of warfarin were observed. Exenatide did not significantly alter the pharmacodynamic properties (e.g., international normalized ratio) of warfarin [see *Drug Interactions* (7.3)].

### **Specific Populations**

#### **Renal Impairment**

Pharmacokinetics of exenatide was studied in subjects with normal, mild, or moderate renal impairment and subjects with end-stage renal disease. In subjects with mild to moderate renal impairment (creatinine clearance 30 to 80 mL/min), exenatide exposure was similar to that of subjects with normal renal function. However, in subjects with end-stage renal disease receiving dialysis, mean exenatide exposure increased by 3.37-fold compared to that of subjects with normal renal function [see *Use in Specific Populations* (8.6)].

#### **Hepatic Impairment**

No pharmacokinetic study has been performed in patients with a diagnosis of acute or chronic hepatic impairment [see *Use in Specific Populations* (8.7)].

#### **Age**

Population pharmacokinetic analysis of patients ranging from 22 to 73 years of age suggests that age does not influence the pharmacokinetic properties of exenatide [see *Use in Specific Population* (8.5)].

#### **Gender**

Population pharmacokinetic analysis of male and female patients suggests that gender does not influence the distribution and elimination of exenatide.

#### **Race**

Population pharmacokinetic analysis of samples from Caucasian, Hispanic, Asian and Black patients suggests that race has no significant influence on the pharmacokinetics of exenatide.

#### **Body Mass Index**

Population pharmacokinetic analysis of patients with body mass indices (BMI)  $\geq 30$  kg/m<sup>2</sup> and  $< 30$  kg/m<sup>2</sup> suggests that BMI has no significant effect on the pharmacokinetics of exenatide.

## **13 NONCLINICAL TOXICOLOGY**

### **13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility**

A 104-week carcinogenicity study was conducted in male and female rats at doses of 18, 70, or 250 mcg/kg/day administered by bolus SC injection. Benign thyroid C-cell adenomas were observed in female rats at all exenatide doses. The incidences in female rats were 8% and 5% in the two control groups and 14%, 11% and 23% in the low-, medium- and high-dose groups with systemic exposures of 5-, 22-, and 130-times, respectively, the human exposure resulting from the maximum recommended dose of 20 mcg/day, based on plasma area under the curve (AUC).

In a 104-week carcinogenicity study in mice at doses of 18, 70, or 250 mcg/kg/day administered by bolus SC injection, no evidence of tumors was observed at doses up to 250 mcg/kg/day, a systemic exposure up to 95-times the human exposure resulting from the maximum recommended dose of 20 mcg/day, based on AUC.

Exenatide was not mutagenic or clastogenic, with or without metabolic activation, in the Ames bacterial mutagenicity assay or chromosomal aberration assay in Chinese hamster ovary cells. Exenatide was negative in the *in vivo* mouse micronucleus assay.

In mouse fertility studies with SC doses of 6, 68, or 760 mcg/kg/day, males were treated for 4 weeks prior to and throughout mating, and females were treated 2 weeks prior to mating and throughout mating until gestation day 7. No adverse effect on fertility was observed at 760 mcg/kg/day, a systemic exposure 390-times the human exposure resulting from the maximum recommended dose of 20 mcg/day, based on AUC.

## **14 CLINICAL STUDIES**

Exenatide has been studied as monotherapy and in combination with metformin, a sulfonyleurea, a thiazolidinedione, a combination of metformin and a sulfonyleurea, a combination of metformin and a thiazolidinedione, or in combination with insulin glargine with or without metformin and/or thiazolidinedione.

### **14.1 Monotherapy**

In a randomized, double-blind, placebo-controlled trial of 24 weeks duration, exenatide 5 mcg BID (n=77), exenatide 10 mcg BID (n=78), or placebo BID (n=77) was used as monotherapy in patients with entry HbA<sub>1c</sub> ranging from 6.5% to 10%. All patients assigned to exenatide initially received 5 mcg BID for 4 weeks. After 4 weeks, those patients either continued to receive exenatide 5 mcg BID or had their dose increased to 10 mcg BID. Patients assigned to placebo received placebo BID throughout the trial. Exenatide or placebo was injected subcutaneously before the morning and evening meals. The majority of patients (68%) were Caucasian, 26% West Asian, 3% Hispanic, 3% Black and 0.4% East Asian.

The primary endpoint was the change in HbA<sub>1c</sub> from baseline to Week 24 (or the last value at time of early discontinuation). Compared to placebo, exenatide 5 mcg BID and

10 mcg BID resulted in statistically significant reductions in HbA<sub>1c</sub> from baseline at Week 24 (Table 6).

**Table 6: Results of 24-Week Placebo-Controlled Trial of Exenatide used as Monotherapy**

	<b>Placebo BID</b>	<b>Exenatide 5 mcg BID</b>	<b>Exenatide 10 mcg* BID</b>
<b>Intent-to-Treat Population (N)</b>	77	77	78
<b>HbA<sub>1c</sub> (%), Mean</b>			
Baseline	7.8	7.9	7.8
Change at Week 24 <sup>†</sup>	-0.2	-0.7	-0.9
Difference from placebo <sup>†</sup> (95% CI)		-0.5 [-0.9, -0.2] <sup>‡</sup>	-0.7 [-1.0, -0.3]
<b>Proportion Achieving HbA<sub>1c</sub> &lt; 7%</b>	38%	48%	53%
<b>Body Weight (kg), Mean</b>			
Baseline	86.1	85.1	86.2
Change at Week 24 <sup>†</sup>	-1.5	-2.7	-2.9
Difference from placebo <sup>†</sup> (95% CI)		-1.3 [-2.3, -0.2]	-1.5 [-2.5, -0.4]
<b>Fasting Serum Glucose<sup>§</sup> (mg/dL), Mean</b>			
Baseline	159	166	155
Change at Week 24 <sup>†</sup>	-5	-17	-19
Difference from placebo <sup>†</sup> (95% CI)		-12 [-23.2, -1.3]	-14 [-24.5, -2.5]
<p>* Exenatide 5 mcg twice daily (BID) for 1 month followed by 10 mcg BID for 5 months before the morning and evening meals.</p> <p>† Least squares means are adjusted for screening HbA<sub>1c</sub> strata and baseline value of the dependent variable.</p> <p>‡ p &lt; 0.01, treatment vs. placebo.</p> <p>§ Measured using the hexokinase-based glucose method.</p> <p>BID = twice daily.</p>			

On average, there were no adverse effects of exenatide on blood pressure or lipids.

## 14.2 Combination Therapy with Oral Antihyperglycemic Medicines

Three 30-week, double-blind, placebo-controlled trials were conducted to evaluate the safety and efficacy of exenatide in patients with type 2 diabetes whose glycemic control was inadequate with metformin alone, a sulfonylurea alone, or metformin in combination

with a sulfonylurea. In addition, a 16-week, placebo-controlled trial was conducted where exenatide was added to existing thiazolidinedione (pioglitazone or rosiglitazone) treatment, with or without metformin, in patients with type 2 diabetes with inadequate glycemic control.

In the 30-week trials, after a 4-week placebo lead-in period, patients were randomly assigned to receive exenatide 5 mcg BID, exenatide 10 mcg BID, or placebo BID before the morning and evening meals, in addition to their existing oral antidiabetic agent. All patients assigned to exenatide initially received 5 mcg BID for 4 weeks. After 4 weeks, those patients either continued to receive exenatide 5 mcg BID or had their dose increased to 10 mcg BID. Patients assigned to placebo received placebo BID throughout the study. A total of 1,446 patients were randomized in the three 30-week trials: 991 (69%) were Caucasian, 224 (16%) Hispanic and 174 (12%) Black. Mean HbA<sub>1c</sub> values at baseline for the trials ranged from 8.2% to 8.7%.

In the placebo-controlled trial of 16 weeks duration, exenatide (n=121) or placebo (n=112) was added to existing thiazolidinedione (pioglitazone or rosiglitazone) treatment, with or without metformin. Randomization to exenatide or placebo was stratified based on whether the patients were receiving metformin. Exenatide treatment was initiated at a dose of 5 mcg BID for 4 weeks then increased to 10 mcg BID for 12 more weeks. Patients assigned to placebo received placebo BID throughout the study. Exenatide or placebo was injected subcutaneously before the morning and evening meals. In this trial, 79% of patients were taking a thiazolidinedione and metformin and 21% were taking a thiazolidinedione alone. The majority of patients (84%) were Caucasian, 8% Hispanic and 3% Black. The mean baseline HbA<sub>1c</sub> values were 7.9% for exenatide and placebo.

The primary endpoint in each study was the mean change in HbA<sub>1c</sub> from baseline to study end (or early discontinuation). Table 7 summarizes the study results for the 30- and 16-week clinical trials.

**Table 7: Results of 30-Week and 16-Week Placebo-Controlled Trials of Exenatide used in Combination with Oral Antidiabetic Agents**

	<b>Placebo BID</b>	<b>Exenatide 5 mcg BID</b>	<b>Exenatide 10 mcg* BID</b>
	<b>In Combination with Metformin (30 Weeks)</b>		
<b>Intent-to-Treat Population (N)</b>	113	110	113
<b>HbA<sub>1c</sub> (%), Mean</b>			
Baseline	8.2	8.3	8.2
Change at Week 30 <sup>†</sup>	-0.0	-0.5	-0.9
Difference from placebo <sup>†</sup> (95% CI)		-0.5 [-0.7, -0.2] <sup>‡</sup>	-0.9 [-1.1, -0.6] <sup>‡</sup>
<b>Proportion Achieving HbA<sub>1c</sub> &lt; 7%</b>	12%	32%	40%
<b>Body Weight (kg), Mean</b>			

Baseline	99.9	100.0	100.9
Change at Week 30 <sup>†</sup>	-0.2	-1.3	-2.6
Difference from placebo <sup>†</sup> (95% CI)		-1.1 [-2.2, -0.0]	-2.4 [-3.5, -1.3]
<b>Fasting Plasma Glucose<sup>§</sup> (mg/dL), Mean</b>			
Baseline	169	176	168
Change at Week 30 <sup>†</sup>	+14	-5	-10
Difference from placebo <sup>†</sup> (95% CI)		-20 [-32, -7]	-24 [-37, -12]
	<b>In Combination with a Sulfonylurea (30 Weeks)</b>		
<b>Intent-to-Treat Population (N)</b>	123	125	129
<b>HbA<sub>1c</sub> (%), Mean</b>			
Baseline	8.7	8.5	8.6
Change at Week 30 <sup>†</sup>	+0.1	-0.5	-0.9
Difference from placebo <sup>†</sup> (95% CI)		-0.6 [-0.9, -0.3] <sup>‡</sup>	-1.0 [-1.3, -0.7] <sup>‡</sup>
<b>Proportion Achieving HbA<sub>1c</sub> &lt; 7%</b>	10%	25%	36%
<b>Body Weight (kg), Mean</b>			
Baseline	99.1	94.9	95.2
Change at Week 30 <sup>†</sup>	-0.8	-1.1	-1.6
Difference from placebo <sup>†</sup> (95% CI)		-0.3 [-1.1, 0.6]	-0.9 [-1.7, -0.0]
<b>Fasting Plasma Glucose<sup>§</sup> (mg/dL), Mean</b>			
Baseline	194	180	178
Change at Week 30 <sup>†</sup>	+6	-5	-11
Difference from placebo <sup>†</sup> (95% CI)		-11 [-25, 3]	-17 [-30, -3]
	<b>In Combination with Metformin and a Sulfonylurea (30 Weeks)</b>		
<b>Intent-to-Treat Population (N)</b>	247	245	241
<b>HbA<sub>1c</sub> (%), Mean</b>			
Baseline	8.5	8.5	8.5
Change at Week 30 <sup>†</sup>	+0.1	-0.7	-0.9
Difference from placebo <sup>†</sup> (95% CI)		-0.8 [-1.0, -0.6] <sup>‡</sup>	-1.0 [-1.2, -0.8] <sup>‡</sup>



placebo† (95% CI)		-0.8 [-1.0, -0.6]	-1.0 [-1.2, -0.8]
<b>Proportion Achieving HbA<sub>1c</sub> &lt; 7%</b>	8%	25%	31%
<b>Body Weight (kg), Mean</b>			
Baseline	99.1	96.9	98.4
Change at Week 30†	-0.9	-1.6	-1.6
Difference from placebo† (95% CI)		-0.7 [-1.2, -0.2]	-0.7 [-1.3, -0.2]
<b>Fasting Plasma Glucose<sup>§</sup> (mg/dL), Mean</b>			
Baseline	181	182	178
Change at Week 30†	+13	-11	-12
Difference from placebo† (95% CI)		-24 [-33, -15]	-25 [-34, -16]
<b>In Combination with a Thiazolidinedione or a Thiazolidinedione plus Metformin (16 Weeks)</b>			
<b>Intent-to-Treat Population (N)</b>	112	Dose not studied	121
<b>HbA<sub>1c</sub> (%), Mean</b>			
Baseline	7.9	Dose not studied	7.9
Change at Week 16†	+0.1	Dose not studied	-0.7
Difference from placebo† (95% CI)		Dose not studied	-0.9 [-1.1, -0.7]‡
<b>Proportion Achieving HbA<sub>1c</sub> &lt; 7%</b>	15%	Dose not studied	51%
<b>Body Weight (kg), Mean</b>			
Baseline	96.8	Dose not studied	97.5
Change at Week 16†	-0.0	Dose not studied	-1.5
Difference from placebo† (95% CI)		Dose not studied	-1.5 [-2.2, -0.7]
<b>Fasting Serum Glucose<sup>§</sup> (mg/dL), Mean</b>			
Baseline	159	Dose not studied	164
Change at Week 16†	+4	Dose not studied	-21
Difference from placebo† (95% CI)		Dose not studied	-25 [-33, -16]

\* Exenatide 5 mcg twice daily for 1 month followed by 10 mcg BID for 6 months for the

30-week trials or 10 mcg BID for 3 months in the 16-week trial before the morning and evening meals.

† Least squares means are adjusted for baseline HbA<sub>1c</sub> strata or value, investigator site, baseline value of the dependent variable (if applicable) and background antihyperglycemic therapy (if applicable).

#  $p < 0.01$ , treatment vs. placebo.

§ Measured using the hexokinase-based glucose method.

BID = twice daily.

## **HbA<sub>1c</sub>**

The addition of exenatide to a regimen of metformin, a sulfonylurea, or both, resulted in statistically significant reductions from baseline in HbA<sub>1c</sub> compared with patients receiving placebo added to these agents in the three controlled trials (Table 7).

In the 16-week trial of exenatide add-on to thiazolidinediones, with or without metformin, exenatide resulted in statistically significant reductions from baseline in HbA<sub>1c</sub> compared with patients receiving placebo (Table 7).

## **Postprandial Glucose**

Postprandial glucose was measured after a mixed meal tolerance test in 9.5% of patients participating in the 30-week add-on to metformin, add-on to sulfonylurea, and add-on to metformin in combination with sulfonylurea clinical trials. In this pooled subset of patients, exenatide reduced postprandial plasma glucose concentrations in a dose-dependent manner. The mean (SD) change in 2-hour postprandial glucose concentration following administration of exenatide at Week 30 relative to baseline was -63 (65) mg/dL for 5 mcg BID (n=42), -71 (73) mg/dL for 10 mcg BID (n=52) and +11 (69) mg/dL for placebo BID (n=44).

## **14.3 Combination with Insulin Glargine**

### **30-Week Placebo-Controlled Trial**

A 30-week, double-blind, placebo-controlled trial was conducted to evaluate the efficacy and safety of exenatide (n=137) versus placebo (n=122) when added to titrated insulin glargine, with or without metformin and/or thiazolidinedione, in patients with type 2 diabetes with inadequate glycemic control.

All patients assigned to exenatide initially received 5 mcg BID for 4 weeks. After 4 weeks, those patients assigned to exenatide had their dose increased to 10 mcg BID. Patients assigned to placebo received placebo BID throughout the trial. Exenatide or placebo was injected subcutaneously before the morning and evening meals. Patients with an HbA<sub>1c</sub>  $\leq 8.0\%$  decreased their pre-study dose of insulin glargine by 20% and patients with an HbA<sub>1c</sub>  $\geq 8.1\%$  maintained their current dose of insulin glargine. Five weeks after initiating randomized treatment, insulin doses were titrated with guidance from the investigator toward predefined fasting glucose targets according to the dose titration algorithm provided in Table 9. The majority of patients (78%) were Caucasian, 10% American Indian or Alaska Native, 9% Black, 3% Asian, and 0.8% of multiple origins.

The primary endpoint was the change in HbA<sub>1c</sub> from baseline to Week 30. Compared to placebo, exenatide 10 mcg BID resulted in statistically significant reductions in HbA<sub>1c</sub> from baseline at Week 30 (Table 8) in patients receiving titrated insulin glargine.

**Table 8: 30-Week Placebo-Controlled Trial of Exenatide Used in Combination with Insulin Glargine with or without Metformin and/or Thiazolidinediones**

	<b>Placebo BID + Titrated Insulin Glargine</b>	<b>Exenatide 10 mcg* BID + Titrated Insulin Glargine</b>
<b>Intent-to-Treat Population (N)</b>	122	137
<b>HbA<sub>1c</sub> (%), Mean</b>		
Baseline	8.5	8.3
Change at Week 30 <sup>†</sup>	-1.0	-1.7
Difference from placebo <sup>†</sup> (95% CI)		-0.7 [-1.0, -0.5] <sup>¶</sup>
<b>Proportion Achieving HbA<sub>1c</sub> &lt; 7%</b>	29%	56%
<b>Body Weight (kg), Mean</b>		
Baseline	93.8	95.4
Change at Week 30 <sup>‡</sup>	1.0	-1.8
Difference from placebo <sup>‡</sup> (95% CI)		-2.7 [-3.7, -1.7] <sup>¶</sup>
<b>Fasting Serum Glucose<sup>§</sup> (mg/dL), Mean</b>		
Baseline	133	132
Change at Week 30 <sup>‡</sup>	-16	-23
Difference from placebo <sup>‡</sup> (95% CI)		-7 [-18, 3]
<p>* Exenatide 5 mcg twice daily for 1 month followed by 10 mcg BID for 5 months for the 30-week trial.</p> <p><sup>†</sup> Least squares means are based on a mixed model adjusting for treatment, pooled investigator, visit, baseline HbA<sub>1c</sub> value and treatment by visit, where subject is treated as a random effect.</p> <p><sup>‡</sup> Least squares means are based on a mixed model adjusting for treatment, pooled investigator, visit, baseline HbA<sub>1c</sub> stratum, baseline value of the dependent variable (where applicable) and treatment by visit, where subject is treated as a random effect.</p> <p><sup>§</sup> Patients in both groups titrated insulin glargine dose to achieve optimal fasting glucose concentrations.</p> <p><sup>¶</sup> p &lt; 0.01, treatment vs. placebo.</p> <p>BID = twice daily.</p>		

**Table 9: Dosing Algorithm for Titration of Insulin Glargine\***

<b>Fasting Plasma Glucose Values (mg/dL)</b>	<b>Dose Change (U)</b>
< 56 <sup>†</sup>	-4

56 to 72 <sup>†</sup>	-2
73 to 99 <sup>‡</sup>	0
100 to 119 <sup>‡</sup>	+2
120 to 139 <sup>‡</sup>	+4
140 to 179 <sup>‡</sup>	+6
≥ 180 <sup>‡</sup>	+8

Abbreviations: U = units.

\* Adapted from Riddle et al. 2003.

<sup>†</sup> Value for at least 1 fasting plasma glucose measurement since the last assessment.

<sup>‡</sup> Based on the average of fasting plasma glucose measurements taken over the prior 3 to 7 days. The increase in the total daily dose should not have exceeded more than 10 units per day or 10% of the current total daily dose, whichever was greater.

### 30-Week Comparator-Controlled Noninferiority Trial

A 30 week, open-label, active comparator-controlled, noninferiority study was conducted to evaluate the safety and efficacy of exenatide (n=315) versus titrated insulin lispro (n=312) on a background of optimized basal insulin glargine and metformin in patients with type 2 diabetes with inadequate glycemic control.

Following a 12-week basal insulin optimization (BIO) phase, subjects with an HbA<sub>1c</sub> > 7.0% entered a 30-week intervention phase and were randomized to add either exenatide or insulin lispro to their existing regimen of insulin glargine and metformin. Insulin glargine was titrated to a target fasting plasma glucose of 72 to 100 mg/dL.

All patients assigned to exenatide initially received 5 mcg BID for four weeks. After four weeks, their dose was increased to 10 mcg BID. Patients in the exenatide-treated arm with an HbA<sub>1c</sub> ≤ 8.0% at the end of the BIO phase decreased their insulin glargine dose by at least 10%.

All patients assigned to insulin lispro three times daily (TID) maintained their prior total daily insulin dose at baseline; however, the initial insulin lispro dose was 1/3 to 1/2; of the total daily insulin dose with the insulin glargine dose reduced accordingly. The insulin lispro dose was titrated based on preprandial glucose values.

The majority of patients (87%) were Caucasian, 7% American Indian or Alaska Native, 5% Asian, and < 1% African American.

The primary endpoint was the change in HbA<sub>1c</sub> from baseline to Week 30. Both exenatide 10 mcg BID and titrated lispro provided a mean reduction in HbA<sub>1c</sub> at Week 30 that met the pre-specified non-inferiority margin of 0.4%.

**Table 10: 30-Week Comparator-Controlled Trial of Exenatide used in Combination with Insulin Glargine and Metformin**

	<b>Titrated Insulin Lispro TID + Titrated Insulin Glargine</b>	<b>Exenatide 10 mcg* BID + Titrated Insulin Glargine</b>
<b>Intent-to-Treat Population (N)</b>	312	315

<b>HbA<sub>1c</sub> (%), Mean</b>		
Baseline	8.2	8.3
Change at Week 30 <sup>†</sup> #	−1.1	−1.1
Difference from Insulin Lispro <sup>†</sup> # (95% CI)		−0.0 [−0.2, 0.1]
<b>Body Weight (kg), Mean</b>		
Baseline	89.3	89.9
Change at Week 30 <sup>†</sup> #	1.9	−2.6
Difference from Insulin Lispro <sup>†</sup> # (95% CI)		−4.5 [−5.2, −3.9]
<b>Fasting Serum Glucose<sup>‡</sup> (mg/dL), Mean</b>		
Baseline	126	130
Change at Week 30 <sup>†</sup> #	5	−7
Difference from Insulin Lispro <sup>†</sup> # (95% CI)		−12 [−19, −4]
<p>* Exenatide 5 mcg BID for 1 month followed by 10 mcg BID for 5 months for the 30-week trial.</p> <p>† Least squares means are based on a mixed model adjusting for treatment, country, prior use of sulfonylurea (yes/no), visit, corresponding baseline, and treatment by visit interaction, where subject is treated as a random effect.</p> <p># Data at 30 weeks are available from 88% and 84% of the intent-to-treat subjects in the Lispro and Exenatide groups, respectively.</p> <p>‡ Patients titrated insulin glargine or insulin lispro dose to achieve prespecified target fasting and preprandial glucose concentrations.</p> <p>BID = twice daily.</p> <p>TID = three times daily.</p>		

## 16 HOW SUPPLIED/STORAGE AND HANDLING

### 16.1 How Supplied

Exenatide Injection, USP is supplied as a clear, colorless sterile solution for subcutaneous injection containing **250 mcg/mL** exenatide, USP.

The following packages are available:

5 mcg per dose, 60 doses, 1.2 mL prefilled pen: NDC 70121-1685-1

10 mcg per dose, 60 doses, 2.4 mL prefilled pen: NDC 70121-1686-1

### 16.2 Storage and Handling

- Store exenatide injection in the refrigerator at 36° to 46°F (2° to 8°C).
- After first use, exenatide injection can be kept at a temperature not to exceed 77°F (25°C).
- Do not freeze. Do not use exenatide injection if it has been frozen.
- Protect exenatide injection from light.
- Discard the pen 30 days after first use, even if some drug remains in the pen.
- Use a puncture-resistant container to discard the needles. Do not reuse or share needles.

## 17 PATIENT COUNSELING INFORMATION

Advise the patient to read the FDA-approved patient labeling (Medication Guide and Instructions for Use).

### *Never Share an Exenatide Injection Pen Between Patients*

Advise patients that they must never share an exenatide injection pen with another person, even if the needle is changed, because doing so carries a risk for transmission of blood-borne pathogens [see *Warnings and Precautions* (5.1)].

### *Acute Pancreatitis*

Inform patients that persistent severe abdominal pain that may radiate to the back and which may or may not be accompanied by vomiting, is the hallmark symptom of acute pancreatitis. Instruct patients to promptly discontinue exenatide and contact their physician if persistent severe abdominal pain occurs [see *Warnings and Precautions* (5.2)].

### *Hypoglycemia with Concomitant Use of Insulin Secretagogues or Insulin*

Inform patients that the risk of hypoglycemia is increased when exenatide is used in combination with an agent that induces hypoglycemia, such as a sulfonylurea or insulin. Educate patients on the signs and symptoms of hypoglycemia [see *Warnings and Precautions* (5.3)].

### *Acute Kidney Injury*

Inform patients treated with exenatide of the potential risk for worsening renal function and about associated signs and symptoms of renal dysfunction, as well as the possibility of dialysis as a medical intervention if renal failure occurs [see *Warnings and Precautions* (5.4)].

### *Drug-Induced Thrombocytopenia*

Inform patients that drug-induced immune-mediated thrombocytopenia has been reported during use of exenatide. Inform patients that if symptoms of thrombocytopenia occur, stop taking exenatide and seek medical advice promptly [see *Warnings and Precautions* (5.8)].

### *Hypersensitivity Reactions*

Inform patients that serious hypersensitivity reactions have been reported during post-marketing use of exenatide. If symptoms of hypersensitivity reactions occur, instruct patients to stop taking exenatide and seek medical advice promptly [see *Warnings and Precautions* (5.7)].

### *Acute Gallbladder Disease*

Inform patients of the potential risk for cholelithiasis or cholecystitis. Instruct patients to contact their physician if cholelithiasis or cholecystitis is suspected for appropriate clinical follow-up [see *Warnings and Precautions* (5.9)].

### *Pulmonary Aspiration During General Anesthesia or Deep Sedation*

Inform patients that exenatide may cause their stomach to empty more slowly which may lead to complications with anesthesia or deep sedation during planned surgeries or procedures. Instruct patients to inform healthcare providers prior to any planned

surgeries or procedures if they are taking exenatide [see *Warnings and Precautions* (5.10)].

### *Pregnancy*

Advise patients to inform their physicians if they are pregnant or intend to become pregnant.

### *Instructions*

Instruct patients to administer exenatide as a subcutaneous injection in the thigh, abdomen, or upper arm at any time within the 60-minute period before the morning and evening meals (or before the two main meals of the day, approximately 6 hours or more apart). Do not administer exenatide injection after a meal. If a dose is missed, resume the treatment regimen as prescribed with the next scheduled dose.

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## **Medication Guide**

<b>Exenatide (ex en' a tide) Injection, USP for subcutaneous use</b>
Read this Medication Guide and the Instructions for Use that comes with exenatide injection before you start using it and each time you get a refill. There may be new information. This Medication Guide does not take the place of talking with your healthcare provider about your medical condition or your treatment. If you have questions about exenatide injection after reading this information, ask your healthcare provider or pharmacist.
<b>What is the most important information I should know about exenatide injection?</b> <ul style="list-style-type: none"><li>• <b>Do not share your exenatide injection 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.</b></li><li>• <b>Serious side effects can happen in people who take exenatide injection, including inflammation of the pancreas (pancreatitis) which may be severe and lead to death.</b> Stop using exenatide injection and call your healthcare provider right away if you have severe pain in your stomach area (abdomen) that will not go away, with or without vomiting. You may feel the pain from your abdomen to your back. These may be symptoms of pancreatitis.</li></ul>
<b>What is exenatide injection?</b>

- Exenatide is an injectable prescription medicine that may improve blood sugar (glucose) control in adults with type 2 diabetes mellitus, when used with a diet and exercise program.
- Exenatide is not insulin.
- Exenatide injection is not a substitute for insulin.
- The use of exenatide injection with short acting insulin is not recommended.
- The use of exenatide injection with rapid acting insulin is not recommended.
- Exenatide injection is not for people with type 1 diabetes or people with diabetic ketoacidosis.
- It is not known if exenatide injection can be used in people who have had pancreatitis.
- It is not known if exenatide injection is safe and effective in children.
- Exenatide injection should not be used in people who have severe kidney problems.

### **Who should not use exenatide injection?**

#### **Do not use exenatide injection if:**

- you have had a severe allergic reaction to exenatide or any of the other ingredients in exenatide injection. See the end of this Medication Guide for a complete list of ingredients in exenatide injection.

Symptoms of a severe allergic reaction with exenatide injection may include:

- swelling of your face, lips, tongue, or throat
- fainting or feeling dizzy
- problems breathing or swallowing
- very rapid heartbeat
- severe rash or itching
- you have a history of low blood platelet count from using exenatide medicines (drug-induced thrombocytopenia).

### **Before taking exenatide injection, tell your healthcare provider about all of your medical conditions, including if you:**

- have or have had problems with your pancreas.
- have severe problems with your stomach, such as delayed emptying of your stomach (gastroparesis) or problems with digesting food.
- have or have had kidney problems, or have had a kidney transplant.
- are scheduled to have surgery or other procedures that use anesthesia or deep sleepiness (deep sedation).
- are pregnant or plan to become pregnant. It is not known if exenatide injection will harm your unborn baby. Tell your healthcare provider if you become pregnant while taking exenatide injection. Talk to your healthcare provider about the best way to control your blood sugar if you plan to become pregnant or while you are pregnant.
- are breastfeeding or plan to breastfeed. It is not known if exenatide passes into your breast milk. You should talk with your healthcare provider about the best way to feed your baby while taking exenatide injection.



Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins and herbal supplements. Exenatide injection may affect the way some medicines work and some other medicines may affect the way exenatide injection works.

Especially tell your healthcare provider if you take:

- other anti-diabetes medicines, especially sulfonylurea medicines or insulin.
- birth control pills that are taken by mouth (oral contraceptives). Exenatide injection may lower the amount of the medicine in your blood from your birth control pills and they may not work as well to prevent pregnancy. Take your birth control pills at least one hour before your injection of exenatide. If you must take your birth control pills with food, take it with a meal or snack at a time when you do not also take exenatide injection.
- an antibiotic. Take antibiotic medicines at least one hour before taking exenatide injection. If you must take your antibiotic with food, take it with a meal or snack at a time when you do not also take exenatide injection.
- warfarin sodium (Coumadin<sup>®</sup>, Jantoven<sup>®</sup>).
- a blood pressure medicine.
- a water pill (diuretic).
- a pain medicine.
- lovastatin (Altoprev<sup>®</sup>, Mevacor<sup>®</sup>, Advicor<sup>®</sup>).

### **How should I take exenatide injection?**

See the Instructions for Use that comes with exenatide injection for instructions for using the exenatide injection pen and injecting exenatide.

- Your healthcare provider may prescribe exenatide injection alone or with certain other medicines to help control your blood sugar.
- Use exenatide injection exactly as your healthcare provider tells you to.
- **Your healthcare provider should teach you how to inject exenatide before you use it for the first time.**
- Inject your dose of exenatide under the skin (subcutaneous injection) of your upper leg (thigh), stomach area (abdomen), or upper arm as instructed by your healthcare provider. Do not inject into a vein or muscle.
- **Do not** mix exenatide injection and insulin in the same syringe or vial even if you take them at the same time.
- Exenatide is injected two times each day, at any time within 60 minutes (1 hour) **before** your morning and evening meals (or **before** the two main meals of the day, approximately 6 hours or more apart). **Do not take exenatide injection after your meal.**
- If you miss a dose of exenatide injection, skip that dose and take your next dose at the next prescribed time. Do not take an extra dose or increase the amount of your next dose to make up for a missed dose.
- If you use too much exenatide, call your healthcare provider. Too much exenatide injection can cause your blood sugar to drop quickly and you may have symptoms of low blood sugar. You may need medical treatment right away. Too much exenatide injection can also cause severe nausea and vomiting.
- If you see your blood sugar increasing during treatment with exenatide injection, talk to your healthcare provider because you may need to adjust your current treatment plan for your diabetes.

## What are the possible side effects of exenatide injection?

### Exenatide injection may cause serious side effects, including:

- See **“What is the most important information I should know about exenatide injection?”**
- **Low blood sugar (hypoglycemia).** Your risk for getting low blood sugar is higher if you take exenatide injection with another medicine that can cause low blood sugar, such as a sulfonylurea or insulin. The dose of your sulfonylurea or insulin medicine may need to be lowered while you use exenatide injection. Signs and symptoms of low blood sugar may include:

- |              |                   |  |                   |
|--------------|-------------------|--|-------------------|
| • headache   | • hunger          | • confusion                            | • feeling jittery |
| • drowsiness | • fast heart beat | • anxiety, irritability or mood change | • blurred vision  |
| • weakness   | • dizziness       | • sweating                             | • slurred speech  |

### Talk with your healthcare provider about how to treat low blood sugar.

- **Kidney problems.** Exenatide injection may cause new or worse problems with kidney function, including kidney failure. Dialysis or kidney transplant may be needed.
- **While taking exenatide injection:** Call your healthcare provider right away if you have nausea, vomiting, or diarrhea that will not go away, or if you cannot take liquids by mouth. You may be at increased risk for kidney problems.
- **Stomach problems.** Other medicines like exenatide injection may cause severe stomach problems. It is not known if exenatide injection causes stomach problems or will cause your stomach problems to worsen.
- **Low blood platelet count (drug-induced thrombocytopenia).** Exenatide injection may cause the number of platelets in your blood to be reduced. When your platelet count is too low, your body cannot form blood clots. You could have serious bleeding that could lead to death. **Stop using exenatide injection and call your healthcare provider right away if you have unusual bleeding or bruising.**
- **Severe allergic reactions.** Severe allergic reactions can happen with exenatide injection. Stop taking exenatide injection, and get medical help right away if you have any symptom of a severe allergic reaction. See **“Who should not use exenatide injection?”**
- **Gallbladder problems.** Gallbladder problems have happened in some people who take exenatide injection. Tell your healthcare provider right away if you get symptoms of gallbladder problems, which may include:
  - pain in your upper stomach (abdomen)
  - yellowing of skin or eyes (jaundice)
  - fever
  - clay-colored stools
- **Food or liquid getting into the lungs during surgery or other procedures that use anesthesia or deep sleepiness (deep sedation).** Exenatide injection

may increase the chance of food getting into your lungs during surgery or other procedures. Tell all your healthcare providers that you are taking exenatide injection before you are scheduled to have surgery or other procedures.

**The most common side effects of exenatide injection include:**

- nausea
- feeling jittery
- indigestion
- vomiting
- dizziness
- constipation
- diarrhea
- headache
- weakness

Nausea is most common when you first start using exenatide injection but may decrease over time.

Talk to your healthcare provider about any side effect that bothers you or that does not go away. These are not all the possible side effects of exenatide injection.

Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

**How should I store exenatide injection?**

- Store your new, unused exenatide injection pen in the original carton in a refrigerator at 36° to 46°F (2° to 8°C).
- After first use, keep your exenatide injection pen at a temperature cooler than 77°F (25°C).
- Do not freeze your exenatide injection pen. Do not use exenatide injection if it has been frozen.
- Protect exenatide injection from light.
- Use an exenatide injection pen for only 30 days. Throw away a used exenatide injection pen after 30 days, even if there is some medicine left in the pen.
- Do not use exenatide injection after the expiration date printed on the label.
- **Keep your exenatide injection pen, pen needles and all medicines out of the reach of children.**

**General information about the safe and effective use of exenatide injection.**

Medicines are sometimes prescribed for purposes other than those listed in a Medication Guide. Do not use exenatide injection for a condition for which it was not prescribed. Do not give exenatide injection to other people, even if they have the same symptoms that you have. It may harm them. You can ask your healthcare provider or pharmacist for information about exenatide injection that is written for health professionals.

**What are the ingredients in exenatide injection?**

**Active ingredient:** exenatide, USP

**Inactive ingredients:** metacresol, mannitol, glacial acetic acid and sodium acetate trihydrate in water for injection.

For more information, go to [www.amneal.com](http://www.amneal.com) or call 1-877-835-5472.

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**INSTRUCTIONS FOR USE**

**Exenatide (ex en' a tide) Injection, USP**

**for subcutaneous use**

**250 mcg/mL, 1.2 mL**

**Do not share your Exenatide Injection 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.**

**Section 1 Read this section completely before you begin. Then, move on to Section 2—Getting Started.**

**WHAT YOU NEED TO KNOW ABOUT YOUR EXENATIDE INJECTION PEN****INSTRUCTIONS FOR USE**

**Read these instructions carefully BEFORE using your Exenatide Injection Pen.** For complete dosing and safety information, also read the Exenatide Injection Medication Guide that comes with the Exenatide Injection Pen carton.

It is important that you use your pen correctly. Failure to follow these instructions completely may result in a wrong dose, a broken pen or an infection.

**These instructions do not take the place of talking with your healthcare provider about your medical condition or your treatment. If you are having problems using your Exenatide Injection Pen, call toll free 1-877-835-5472.**

**IMPORTANT INFORMATION ABOUT YOUR EXENATIDE INJECTION PEN**

- Each Exenatide Injection Pen contains enough medicine for injection two times each day for 30 days. You do not have to measure any doses, the pen measures each dose for you.
- **Do not transfer the medicine in the Exenatide Injection Pen to a syringe or vial.**
- **Do not** mix Exenatide Injection and insulin in the same syringe or vial even if you take them at the same time.
- If any part of your pen appears broken or damaged, **do not** use the pen.
- This Exenatide Injection Pen is **not** recommended for use by people who are blind or have vision problems without the help of a person trained in the proper use of the pen.
- **Follow the injection method explained to you by your healthcare provider.**
- Follow Section 2 only to set up a new pen before first use.
- Section 3 of these Instructions for Use should be used for every injection.

## ABOUT PEN NEEDLES

### What kinds of needles can be used with my Exenatide Injection Pen?

- **Pen needles are not included with your pen.** You may need a prescription to get them from your pharmacist.
- Use 29 (thin), 30, or 31 (thinner) gauge disposable pen needles with your Exenatide Injection Pen. Ask your healthcare provider which needle gauge and length is best for you.

### Do I use a new needle for each injection?

- **Yes. Do not reuse or share your needles with other people. You may give other people a serious infection or get a serious infection from them.**
- Remove the needle from the pen immediately after you complete each injection. This will help prevent leakage of Exenatide Injection, keep out air bubbles, reduce needle clogs, and decrease the risk of infection.
- **Do not** push the injection button on your pen unless a needle is attached to the pen.

### How do I throw away my needles?

Put your used needles 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 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.

**Do not share your Exenatide Injection 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.**

## **STORING YOUR EXENATIDE INJECTION PEN**

### **How do I store my Exenatide Injection Pen?**

- Prior to first use, store your unused Exenatide Injection Pen in the original carton in a refrigerator at 36° to 46°F (2° to 8°C).
- After first use, your Exenatide Injection Pen can be kept at a temperature cooler than 77°F (25°C).
- **Do not** freeze your Exenatide Injection Pen. **Do not** use Exenatide Injection if it has been frozen. Exenatide Injection should be protected from light.
- When carrying the pen away from home, store the pen at a temperature between 36° to 77°F (2° to 25°C) and keep dry.
- **Do not** store the pen with the needle attached. If the needle is left on the pen, Exenatide Injection may leak from the pen and air bubbles may form in the cartridge.

**Keep your pen and needles out of the reach of children.**

### **How long can I use an Exenatide Injection Pen?**

- You can use your Exenatide Injection Pen for up to 30 days after setting up a new pen for first use. **After 30 days, throw away the Exenatide Injection Pen in a FDA-cleared sharps disposal container, even if it is not completely empty.**
- Mark the date when you first used your pen and the date 30 days later in the spaces below:

**Date of First Use** \_\_\_\_\_ **Date to Throw Away Pen** \_\_\_\_\_

- **Exenatide Injection should not be used after the expiration date printed on the pen label.**

### **How do I clean my Exenatide Injection Pen?**

- Wipe the outside of the pen with a clean, damp cloth.
- White particles may appear on the outside tip of the cartridge during normal use. You may remove them with an alcohol wipe or alcohol swab.

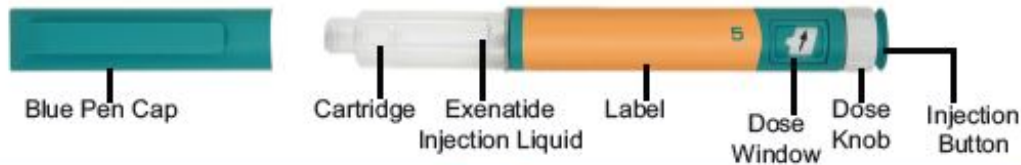
**See the complete Exenatide Injection Medication Guide that comes with Exenatide Injection. For more information, call toll free 1-877-835-5472.**

**Section 2      Read and follow the directions in this section only after you've read Section 1—What You Need To Know About Your Exenatide Injection Pen.**

## **GETTING STARTED**

Set up your new pen just before you use it the first time. For routine use, **do not repeat this one-time-only new pen setup.** If you do, you will run out of Exenatide Injection before 30 days of use.

## Exenatide Injection Pen Parts

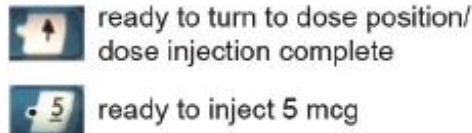


## Pen Needle Parts

(Pen Needles Not Included)

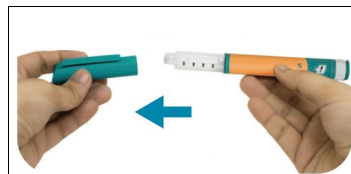


## Dose Window Symbols

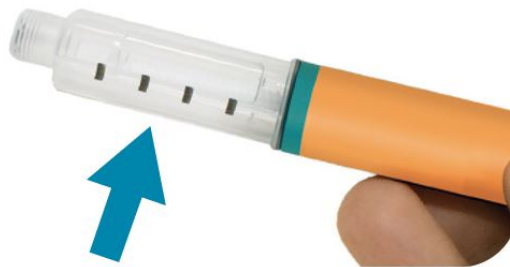


## ONE-TIME-ONLY NEW PEN SETUP

### STEP 1 Check the Pen



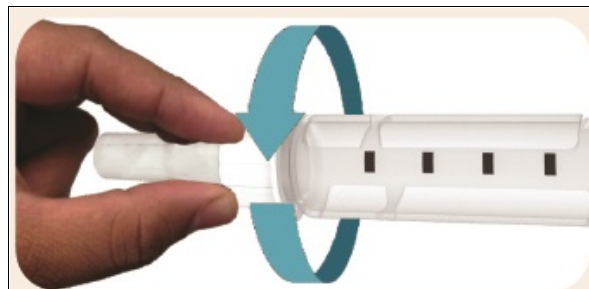
- Wash hands prior to use.
- Check pen label to make sure it is your 5 mcg pen.
- Pull off the blue pen cap.



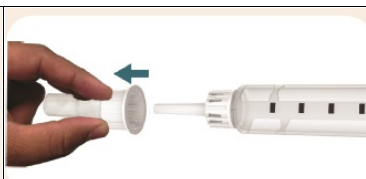
- Check Exenatide Injection in the cartridge. The liquid should be clear, colorless, and free of particles. If not, **do not use**.

**Note:** Small air bubbles in the cartridge are normal.

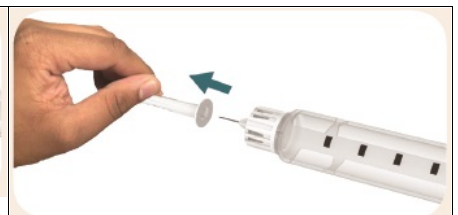
### STEP 2 Attach the Needle



- Remove paper tab from outer needle shield.
- Push** outer needle shield containing the needle **straight** onto



- Pull off outer needle shield. **Do not** throw away.





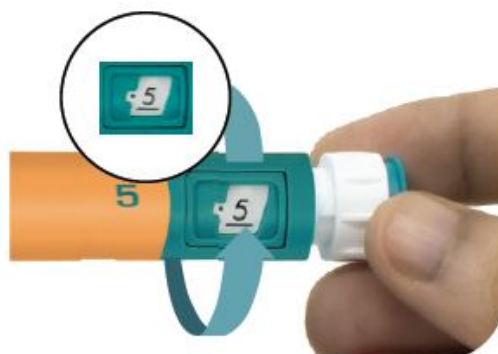
- Pull off inner needle shield and throw away. A small drop of liquid may appear. This is normal.


pen, then <b>screw</b> needle on until secure.		
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### STEP 3 Dial the Dose




a. Check that the  is in the dose window. If not, **turn dose knob towards you (counter-clockwise)** until the  appears in the dose window.



b. **Turn the dose knob away from you (clockwise) until it stops completely and the dose knob cannot be rotated any further (clockwise). When the dose knob has been turned completely, the 5 with the line under it will be at the center of the dose window and the • will be in the nose of the dose window** .





CAUTION: Make sure that the • is in the nose and the 5 with the line under it is in the center of the dose window before proceeding to the next step. 

**Note:** If you cannot turn the dose knob away from you to the , see **Commonly Asked Questions**, number 7, in Section 4 of these Instructions for Use.

### STEP 4 Prepare the Pen

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 <p>a. Point the needle of the pen up and away from you.</p>	 <p><b>PUSH &amp; HOLD</b> b. <b>Use thumb to firmly push injection button in until it stops</b>, then continue holding the injection button in while <b>slowly counting to 5</b>. c. <b>If you do not see a stream or several drops come from the needle tip, repeat Steps 3 &amp; 4.</b></p>	 <p>d. Pen preparation is complete when the  is in the center of the dose window <b>and</b> you have seen a stream or several drops come from the needle tip.</p>
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**Note:** If you do not see liquid after 4 times, see **Commonly Asked Questions**, number 3, in Section 4 of these Instructions for Use.

## STEP 5 Complete New Pen Setup

<p>a. <b>For routine use, do not repeat this one-time-only new pen setup.</b> If you do, you will run out of Exenatide Injection before 30 days of use.</p>	<p>b. You are now ready for your first dose of Exenatide Injection. c. <b>Go to Section 3, Step 3, for instructions on how to inject your first routine dose.</b></p>
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**Section 3** Now that you have done the one-time-only new pen setup, follow **Section 3** for all of your injections.




## ROUTINE USE

### STEP 1 Check the Pen




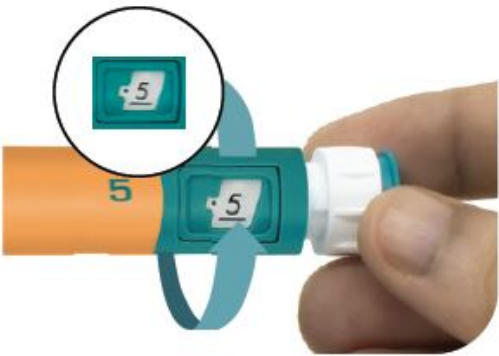

 <p>a. Wash hands prior to use. b. Check pen label to make sure it is your 5</p>	 <p>d. Check Exenatide Injection in the</p>	<p><b>Note:</b> Small air bubbles will not harm you or affect your dose.</p>
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mcg pen. c. Pull off the blue pen cap.	cartridge. e. The liquid should be clear, colorless, and free of particles. If it is not, <b>do not use</b> .	
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## STEP 2 Attach the Needle

 <p>a. Remove paper tab from outer needle shield.</p>	 <p>c. Pull off outer needle shield. <b>Do not</b> throw away.</p>	 <p>d. Pull off inner needle shield and throw away. A small drop of liquid may appear. This is normal.</p>
<p>b. <b>Push</b> outer needle shield containing the needle <b>straight</b> onto pen, then <b>screw</b> needle on until secure.</p>		

## STEP 3 Dial the Dose

 <p>a. Check that the  is in the dose window. If not, <b>turn dose knob towards you (counter-clockwise) until it stops</b> and the  is in the dose window.</p>	 <p>b. <b>Turn the dose knob away from you (clockwise) until it stops completely and the dose knob cannot be rotated any further (clockwise). When the dose knob has been turned</b></p>	<p>CAUTION: Make sure that the • is in the nose and the <u>5</u> with the line under it is in the center of the dose window before proceeding to the next step. </p>
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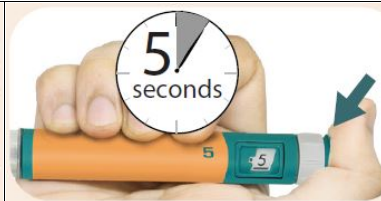
**completely**, the 5 with the line under it will be at the center of the dose window and the • will be in the nose of the dose window .

**Note:** If you cannot turn the dose knob away from you to the , see **Commonly Asked Questions**, number 7, in Section 4 of these Instructions for Use.

#### STEP 4 Inject the Dose




- a. Grip pen firmly.
- b. Insert needle into skin using the under-the-skin (subcutaneous) injection method explained by your healthcare provider.



#### **PUSH & HOLD**

- c. **Use thumb to firmly push injection button in until it stops.** Continue holding in the injection button while **slowly counting to 5** to get a full dose.
- d. Remove needle from skin.



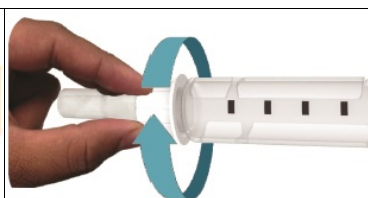
- e. Injection is complete when the  is in the center of the dose window.
- f. The pen is also now reset for the next injection dose.

**Note:** If you see several drops of Exenatide Injection leaking from the needle after the injection, you may not have received a complete dose. See **Commonly Asked Questions**, number 4, in Section 4 of these Instructions for Use.

#### STEP 5 Remove and Dispose of the Needle



- a. Carefully put the outer needle shield back over the needle.
- b. **Remove the needle after each injection.**



- c. Unscrew the needle.



- d. Throw away needles in a FDA-cleared sharps disposal container (see above **“How do I throw away my needles?”**) or as recommended by your healthcare provider.

## STEP 6 Store Pen for Next Dose

- a. Replace Blue Pen Cap on pen before storage.
- b. Store your Exenatide Injection Pen at a temperature between 36° to 77°F (2° to 25°C). (See **Storing Your Exenatide Injection Pen** in Section 1 of these Instructions for Use for complete storage information.)
- c. When it is time for your next routine dose, go to **Section 3, Step 1**, and repeat Steps 1 to 6.

## Section 4

### COMMONLY ASKED QUESTIONS

1. **Do I need to do the One-Time-Only New Pen Setup before every dose?**
  - No. **The One-Time-Only New Pen Setup is done only once, just before each new pen is used for the first time.**
  - The purpose of the setup is to make sure that your Exenatide Injection Pen is ready to use for the next 30 days.
  - **If you repeat the One-Time-Only New Pen Setup before each routine dose, you will not have enough Exenatide Injection for 30 days.** The small amount of Exenatide Injection used in the new pen setup will not affect the 30-day supply of Exenatide Injection.
2. **Why are there air bubbles in the cartridge?**
  - A small air bubble is normal. It will not harm you or affect your dose.
  - If the pen is stored with a needle attached, air bubbles may form in the cartridge. **Do not** store the pen with the needle attached.
3. **What should I do if Exenatide Injection does not come out of the needle tip after four tries during One-Time-Only New Pen Setup?**
  - Carefully put the outer needle shield back over the needle. Remove the needle by unscrewing it. Throw away the needle properly.
  - Attach a new needle and repeat **One-Time-Only New Pen Setup, Steps 2 to 5**, in Section 2 of these Instructions for Use. Once you see several drops or a stream of liquid coming out of the tip of the needle, the setup is complete.
4. **Why do I see Exenatide Injection leaking from my needle after I have finished my injection?**

It is normal for a single drop to remain on the tip of your needle after your injection is complete. If you see more than one drop:

  - You may not have received your full dose. **Do not inject another dose.** Talk with your healthcare provider about what to do about a partial dose.
  - To make sure that you get your full dose, when you take your injections, **firmly push and hold** the injection button in and **slowly count to 5** (see **Section 3, Step 4: Inject the Dose**).
5. **How can I tell when the injection is complete?**

The injection is complete when:

- You have firmly pushed the injection button in all the way **until it stops**

**and**

- **You have slowly counted to 5** while you are still holding the injection button in and the needle is still in your skin

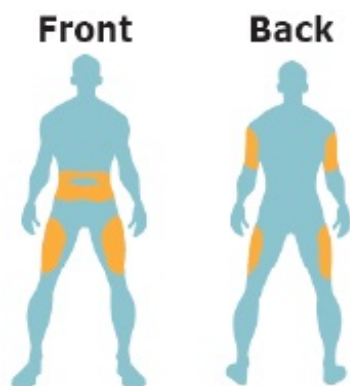
**and**

- The  is in the center of the dose window.

If you hear a click sound from your Exenatide Injection Pen, ignore it. You must follow **all** the steps listed above to make sure your injection is complete.

## **6. Where should I inject Exenatide Injection?**

Inject Exenatide Injection into your abdomen, thigh, or upper arm using the injection method explained to you by your healthcare provider.



## **7. What if I cannot turn the dose knob or the injection button cannot be pushed in?**

Check the symbol in the dose window. Follow the steps next to the matching symbol.

**If  is in the dose window and the dose knob will not turn:**

- The cartridge in your Exenatide Injection Pen may not have enough medicine to deliver a full dose. A small amount of Exenatide Injection will always stay in the cartridge. If the cartridge contains a small amount and the dose knob will not turn, your pen does not have enough Exenatide Injection and will not deliver any more doses. Get a new Exenatide Injection Pen. (or)

**The injection button was not pushed in all the way during the previous dose and a complete dose was not delivered. Talk with your healthcare provider about what to do about a partial dose.**

- Follow these steps to reset your pen for your next injection:
- Firmly push the injection button in all the way **until it stops**. Keep holding the injection button in until



appears in the dose window and **slowly count to 5**. Then release the injection

button.

- If you cannot turn the dose knob, the needle may be clogged. Replace the needle and repeat the step above.
- For your next dose, be sure to **firmly push and hold** the injection button in and **slowly count to 5** before removing needle from skin.

If  is in the dose window and the injection button cannot be pushed in:

- The needle may be clogged, bent, or incorrectly attached.
- Attach a new needle. Make sure needle is on straight and screwed on all the way.
- Firmly push the injection button in all the way. Exenatide Injection should come from needle tip.

**See the complete Exenatide Injection Medication Guide that comes with Exenatide Injection. For more information, call toll free 1-877-835-5472.**

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

Manufactured by:

**Amneal Pharmaceuticals Pvt. Ltd.**

**Parenteral Unit**

Ahmedabad 382213, INDIA

Distributed by:

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Bridgewater, NJ 08807

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## **INSTRUCTIONS FOR USE**

**Exenatide (ex en' a tide) Injection, USP**

**for subcutaneous use**

**250 mcg/mL, 2.4 mL**

**Do not share your Exenatide Injection 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.**

**Section 1      Read this section completely before you begin. Then, move on to Section 2—Getting Started.**

**WHAT YOU NEED TO KNOW ABOUT YOUR EXENATIDE INJECTION PEN**



## INSTRUCTIONS FOR USE

**Read these instructions carefully BEFORE using your Exenatide Injection Pen.** For complete dosing and safety information, also read the Exenatide Injection Medication Guide that comes with the Exenatide Injection Pen carton.

It is important that you use your pen correctly. Failure to follow these instructions completely may result in a wrong dose, a broken pen or an infection.

**These instructions do not take the place of talking with your healthcare provider about your medical condition or your treatment. If you are having problems using your Exenatide Injection Pen, call toll free 1-877-835-5472.**

## IMPORTANT INFORMATION ABOUT YOUR EXENATIDE INJECTION PEN

- Each Exenatide Injection Pen contains enough medicine for injection two times each day for 30 days. You do not have to measure any doses, the pen measures each dose for you.
- **Do not transfer the medicine in the Exenatide Injection Pen to a syringe or vial.**
- **Do not** mix Exenatide Injection and insulin in the same syringe or vial even if you take them at the same time.
- If any part of your pen appears broken or damaged, **do not** use the pen.
- This Exenatide Injection Pen is **not** recommended for use by people who are blind or have vision problems without the help of a person trained in the proper use of the pen.
- **Follow the injection method explained to you by your healthcare provider.**
- Follow Section 2 only to set up a new pen before first use.
- Section 3 of these Instructions for Use should be used for every injection.

## ABOUT PEN NEEDLES

**What kinds of needles can be used with my Exenatide Injection Pen?**

- **Pen needles are not included with your pen.** You may need a prescription to get them from your pharmacist.
- Use 29 (thin), 30, or 31 (thinner) gauge disposable pen needles with your Exenatide Injection Pen. Ask your healthcare provider which needle gauge and length is best for



you.

### **Do I use a new needle for each injection?**

- **Yes. Do not reuse or share your needles with other people. You may give other people a serious infection or get a serious infection from them.**
- Remove the needle from the pen immediately after you complete each injection. This will help prevent leakage of Exenatide Injection, keep out air bubbles, reduce needle clogs, and decrease the risk of infection.
- **Do not** push the injection button on your pen unless a needle is attached to the pen.

### **How do I throw away my needles?**

Put your used needles 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 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.

**Do not share your Exenatide Injection 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.**

### **STORING YOUR EXENATIDE INJECTION PEN**

#### **How do I store my Exenatide Injection Pen?**

- Prior to first use, store your unused Exenatide Injection Pen in the original carton in a refrigerator at 36° to 46°F (2° to 8°C).
- After first use, your Exenatide Injection Pen can be kept at a temperature cooler than 77°F (25°C).
- **Do not** freeze your Exenatide Injection Pen. **Do not** use Exenatide Injection if it has been frozen. Exenatide Injection should be protected from light.
- When carrying the pen away from home, store the pen at a temperature between 36° to 77°F (2° to 25°C) and keep dry.
- **Do not** store the pen with the needle attached. If the needle is left on the pen, Exenatide Injection may leak from the pen and air bubbles may form in the cartridge.

**Keep your pen and needles out of the reach of children.**

#### **How long can I use an Exenatide Injection Pen?**

- You can use your Exenatide Injection Pen for up to 30 days after setting up a new pen for first use. **After 30 days, throw away the Exenatide Injection Pen in a FDA-cleared sharps disposal container, even if it is not completely empty.**



- Mark the date when you first used your pen and the date 30 days later in the spaces below:

**Date of First Use** \_\_\_\_\_ **Date to Throw Away Pen** \_\_\_\_\_

- **Exenatide Injection should not be used after the expiration date printed on the pen label.**

### How do I clean my Exenatide Injection Pen?

- Wipe the outside of the pen with a clean, damp cloth.
- White particles may appear on the outside tip of the cartridge during normal use. You may remove them with an alcohol wipe or alcohol swab.

**See the complete Exenatide Injection Medication Guide that comes with Exenatide Injection. For more information, call toll free 1-877-835-5472.**

**Section 2 Read and follow the directions in this section only after you've read Section 1—What You Need To Know About Your Exenatide Injection Pen.**

### GETTING STARTED

Set up your new pen just before you use it the first time. For routine use, **do not repeat this one-time-only new pen setup.** If you do, you will run out of Exenatide Injection before 30 days of use.

## Exenatide Injection Pen Parts

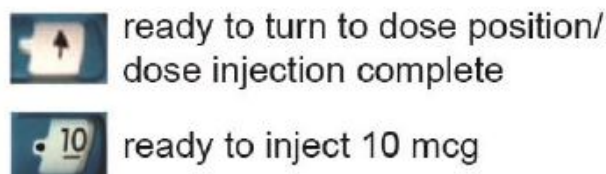


## Pen Needle Parts

(Pen Needles Not Included)

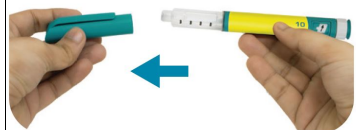
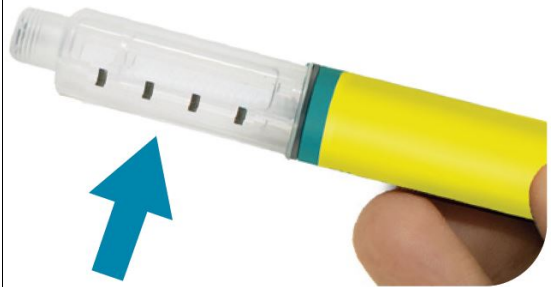


## Dose Window Symbols

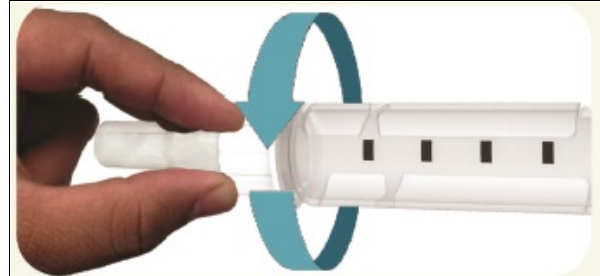
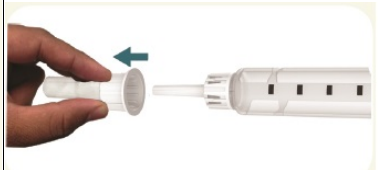
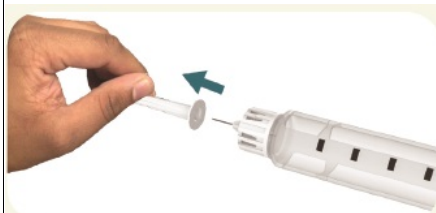


### ONE-TIME-ONLY NEW PEN SETUP




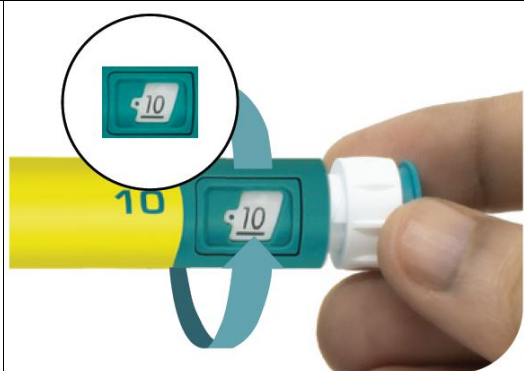

#### STEP 1 Check the Pen


 <p>a. Wash hands prior to use. b. Check pen label to make sure it is your 10 mcg pen. c. Pull off the blue pen cap.</p>	 <p>d. Check Exenatide Injection in the cartridge. The liquid should be clear, colorless, and free of particles. If not, <b>do not use</b>.</p>	<p><b>Note:</b> Small air bubbles in the cartridge are normal.</p>
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## STEP 2 Attach the Needle

 <p>a. Remove paper tab from outer needle shield. b. <b>Push</b> outer needle shield containing the needle <b>straight</b> onto the pen, then <b>screw</b> needle on until secure.</p>	 <p>c. Pull off outer needle shield. <b>Do not</b> throw away.</p>	 <p>d. Pull off inner needle shield and throw away. A small drop of liquid may appear. This is normal.</p>
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## STEP 3 Dial the Dose

 <p>a. Check that the  is in the dose window. If not, <b>turn dose knob towards you (counter-clockwise)</b> until the  appears in the dose window.</p>	 <p>b. <b>Turn the dose knob away from you (clockwise) until it stops completely and the dose knob cannot be rotated any further (clockwise). When the dose</b></p>	<p>CAUTION: Make sure that the • is in the nose and the <u>10</u> with the line under it is in the center of the dose window before proceeding to the next step. </p>
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**knob has been turned completely,** the 10 with the line under it will be at the center of the dose window and the • will be in the nose of the dose window .

**Note:** If you cannot turn the dose knob away from you to the , see **Commonly Asked Questions**, number 7, in Section 4 of these Instructions for Use.

#### STEP 4 Prepare the Pen




a. Point the needle of the pen up and away from you.



##### **PUSH & HOLD**

b. **Use thumb to firmly push injection button in until it stops,** then continue holding the injection button in while **slowly counting to 5.**  
c. **If you do not see a stream or several drops come from the needle tip, repeat Steps 3 & 4.**



d. Pen preparation is complete when the  is in the center of the dose window **and** you have seen a stream or several drops come from the needle tip.

**Note:** If you do not see liquid after 4 times, see **Commonly Asked Questions**, number 3, in Section 4 of these Instructions for Use.

#### STEP 5 Complete New Pen Setup

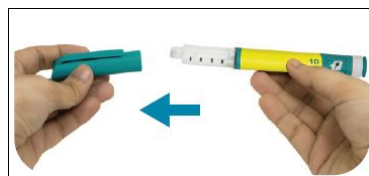
a. **For routine use, do not repeat this one-time-only new pen setup.** If you do, you will run out of Exenatide Injection before 30 days of use.

b. You are now ready for your first dose of Exenatide Injection.  
c. **Go to Section 3, Step 3, for instructions on how to inject your first routine dose.**

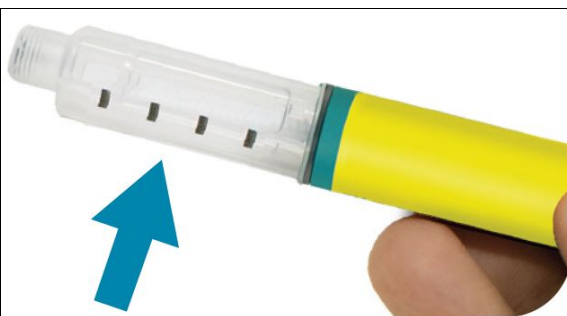
**Section 3** Now that you have done the one-time-only new pen setup, follow Section 3 for all of your injections.

## ROUTINE USE

### STEP 1 Check the Pen



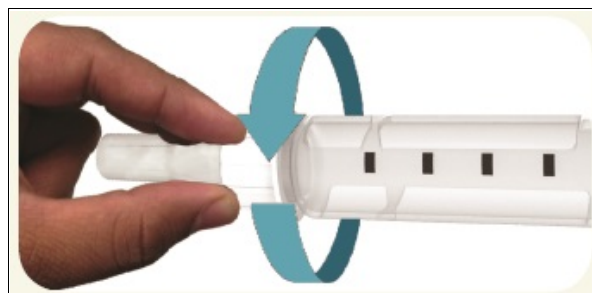
- a. Wash hands prior to use.
- b. Check pen label to make sure it is your 10 mcg pen.
- c. Pull off the blue pen cap.



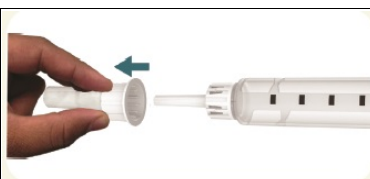
- d. Check Exenatide Injection in the cartridge.
- e. The liquid should be clear, colorless, and free of particles. If it is not, do not use.

**Note:** Small air bubbles will not harm you or affect your dose.

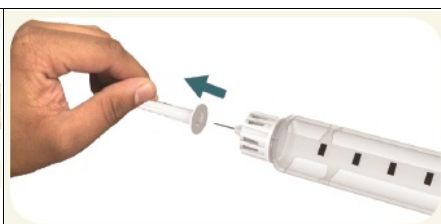
### STEP 2 Attach the Needle



- a. Remove paper tab from outer needle shield.
- b. **Push** outer needle shield containing the needle **straight** onto pen, then **screw** needle on until secure.




- c. Pull off outer needle shield. **Do not** throw away.

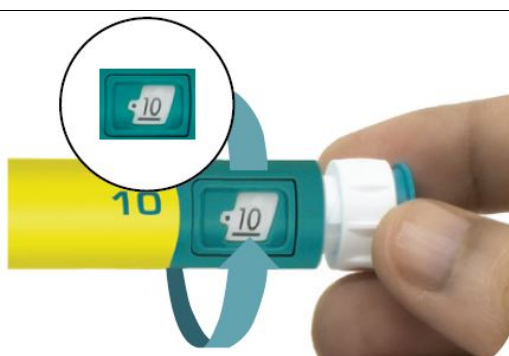


- d. Pull off inner needle shield and throw away. A small drop of liquid may appear. This is normal.


### STEP 3 Dial the Dose




- a. Check that the  is in the dose window. If not,





- b. **Turn the dose knob away from you (clockwise) until it**

**CAUTION:** Make sure that the • is in the nose and the 10 with the line under it is in the center of the dose window before proceeding to the next step. 



turn dose knob towards you (counter-clockwise) until it stops and the  is in the dose window.

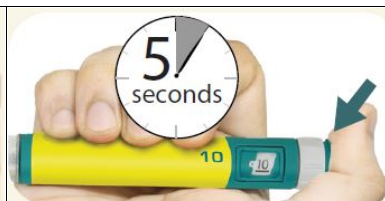
stops completely and the dose knob cannot be rotated any further (clockwise). When the dose knob has been turned completely, the 10 with the line under it will be at the center of the dose window and the • will be in the nose of the dose window .

**Note:** If you cannot turn the dose knob away from you to the , see **Commonly Asked Questions**, number 7, in Section 4 of these Instructions for Use.

#### STEP 4 Inject the Dose




- a. Grip pen firmly.
- b. Insert needle into skin using the under-the-skin (subcutaneous) injection method explained by your healthcare provider.



- PUSH & HOLD**
- c. **Use thumb to firmly push injection button in until it stops.** Continue holding in the injection button while **slowly counting to 5** to get a full dose.
- d. Remove needle from skin.



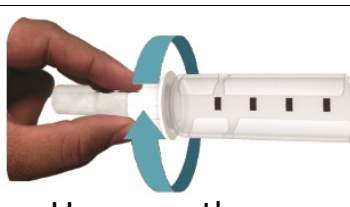
- e. Injection is complete when the  is in the center of the dose window.
- f. The pen is also now reset for the next injection dose.

**Note:** If you see several drops of Exenatide Injection leaking from the needle after the injection, you may not have received a complete dose. See **Commonly Asked Questions**, number 4, in Section 4 of these Instructions for Use.

#### STEP 5 Remove and Dispose of the Needle



- a. Carefully put the outer needle shield back over the needle.
- b. **Remove the needle after each injection.**



- c. Unscrew the needle.



- d. Throw away needles in a FDA-cleared sharps disposal container

	(see above “ <b>How do I throw away my needles?</b> ”) or as recommended by your healthcare provider.
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## STEP 6 Store Pen for Next Dose

- a. Replace Blue Pen Cap on pen before storage.
- b. Store your Exenatide Injection Pen at a temperature between 36° to 77°F (2° to 25°C). (See **Storing Your Exenatide Injection Pen** in Section 1 of these Instructions for Use for complete storage information.)
- c. When it is time for your next routine dose, go to **Section 3, Step 1**, and repeat Steps 1 to 6.

## Section 4

### COMMONLY ASKED QUESTIONS

1. **Do I need to do the One-Time-Only New Pen Setup before every dose?**
  - No. **The One-Time-Only New Pen Setup is done only once, just before each new pen is used for the first time.**
  - The purpose of the setup is to make sure that your Exenatide Injection Pen is ready to use for the next 30 days.
  - **If you repeat the One-Time-Only New Pen Setup before each routine dose, you will not have enough Exenatide Injection for 30 days.** The small amount of Exenatide Injection used in the new pen setup will not affect the 30-day supply of Exenatide Injection.
2. **Why are there air bubbles in the cartridge?**
  - A small air bubble is normal. It will not harm you or affect your dose.
  - If the pen is stored with a needle attached, air bubbles may form in the cartridge. **Do not** store the pen with the needle attached.
3. **What should I do if Exenatide Injection does not come out of the needle tip after four tries during One-Time-Only New Pen Setup?**
  - Carefully put the outer needle shield back over the needle. Remove the needle by unscrewing it. Throw away the needle properly.
  - Attach a new needle and repeat **One-Time-Only New Pen Setup, Steps 2 to 5**, in Section 2 of these Instructions for Use. Once you see several drops or a stream of liquid coming out of the tip of the needle, the setup is complete.
4. **Why do I see Exenatide Injection leaking from my needle after I have finished my injection?**

It is normal for a single drop to remain on the tip of your needle after your injection is complete. If you see more than one drop:

- You may not have received your full dose. **Do not inject another dose.** Talk with your healthcare provider about what to do about a partial dose.
- To make sure that you get your full dose, when you take your injections, **firmly push and hold** the injection button in and **slowly count to 5** (see **Section 3, Step 4: Inject the Dose**).

## 5. How can I tell when the injection is complete?

The injection is complete when:

- You have firmly pushed the injection button in all the way **until it stops**

**and**

- **You have slowly counted to 5** while you are still holding the injection button in and the needle is still in your skin

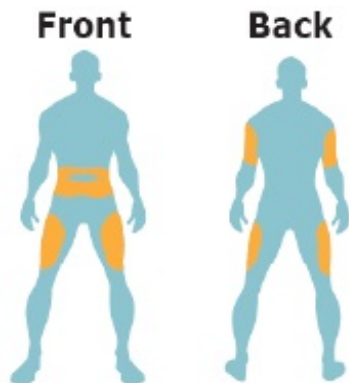
**and**

- The  is in the center of the dose window.

If you hear a click sound from your Exenatide Injection Pen, ignore it. You must follow **all** the steps listed above to make sure your injection is complete.

## 6. Where should I inject Exenatide Injection?

Inject Exenatide Injection into your abdomen, thigh, or upper arm using the injection method explained to you by your healthcare provider.



## 7. What if I cannot turn the dose knob or the injection button cannot be pushed in?

Check the symbol in the dose window. Follow the steps next to the matching symbol.

**If  is in the dose window and the dose knob will not turn:**

- The cartridge in your Exenatide Injection Pen may not have enough medicine to deliver a full dose. A small amount of Exenatide Injection will always stay in the cartridge. If the cartridge contains a small amount and the dose knob will not turn, your pen does not have enough Exenatide Injection and will not deliver any more doses. Get a new Exenatide Injection Pen. (or)

**The injection button was not pushed in all the way during the previous dose and a complete dose was not delivered. Talk with your healthcare provider about what to do about a partial dose.**

- Follow these steps to reset your pen for your next injection:
- Firmly push the injection button in all the way **until it stops**. Keep holding the injection button in until



appears in the dose window and **slowly count to 5**. Then release the injection button.

- If you cannot turn the dose knob, the needle may be clogged. Replace the needle and repeat the step above.
- For your next dose, be sure to **firmly push and hold** the injection button in and **slowly count to 5** before removing needle from skin.

If  is in the dose window and the injection button cannot be pushed in:

- The needle may be clogged, bent, or incorrectly attached.
- Attach a new needle. Make sure needle is on straight and screwed on all the way.
- Firmly push the injection button in all the way. Exenatide Injection should come from needle tip.

**See the complete Exenatide Injection Medication Guide that comes with Exenatide Injection. For more information, call toll free 1-877-835-5472.**

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

Manufactured by:

**Amneal Pharmaceuticals Pvt. Ltd.**

**Parenteral Unit**

Ahmedabad 382213, INDIA

Distributed by:

**Amneal Pharmaceuticals LLC**

Bridgewater, NJ 08807

Rev. 11-2024-06

## **PRINCIPAL DISPLAY PANEL**

**NDC 70121-1685-1**

**Exenatide Injection, 250 mcg/mL (1.2 mL)**

**Rx only**

**Amneal Pharmaceuticals LLC**



Mfg. Lic. No. G/28/1539  
Distributed by:  
**Amneal Pharmaceuticals LLC**  
Bridgewater, NJ 08807

Rev. 11-2024-04  
Made in INDIA



LOT :  
EXP :

LOT : XXXXXXXX  
EXP : YYYY-MM  
Area for  
Batch coding details  
(36.25 x 9 mm)

NDC 70121-1685-1

## Exenatide Injection, USP

**5**  
mcg  
per dose

**For Single Patient Use Only**



250 mcg/mL, 1.2 mL

**REFRIGERATE BEFORE FIRST USE - DO NOT FREEZE.  
DO NOT TRANSFER THIS MEDICATION TO A SYRINGE.**

THROW AWAY 30 DAYS AFTER FIRST USE.

**EACH PREFILLED PEN WILL DELIVER  
60 DOSES OF 5 MCG EACH.**

**Rx only**

<p><b>5</b> mcg per dose</p>	<p><b>Exenatide Injection, USP</b> <b>For Single Patient Use Only</b> 250 mcg/mL, 1.2 mL</p> <p>Contents: One Prefilled Pen and Product Literature.</p>	<p>Non Varnish Area for Lot No. and Exp. Date. 70 x 23 mm</p>
<p><b>5</b> mcg per dose</p> <p>NDC 70121-1685-1 <b>Exenatide Injection, USP</b> <b>For Single Patient Use Only</b> 250 mcg/mL, 1.2 mL</p>	<p>NDC 70121-1685-1</p> <p><b>Exenatide Injection, USP</b> <b>For Single Patient Use Only</b> 250 mcg/mL, 1.2 mL</p>  <p><b>Rx only</b></p> <p>Each prefilled pen will deliver 60 doses of 5 mcg each. SUBCUTANEOUS USE ONLY      REFRIGERATE - DO NOT FREEZE DO NOT TRANSFER THIS MEDICATION TO A SYRINGE.</p>	<p><b>Pen needles not included.</b> Ask your healthcare provider which pen needle length and gauge is best for you. Use 29 (thin), 30, or 31 (thinner) gauge disposable pen needles. Dispense the enclosed Medication Guide to each patient.</p> <p>OPEN HERE</p>
<p><b>5</b> mcg per dose</p>	<p><b>Exenatide Injection, USP</b> <b>For Single Patient Use Only</b> 250 mcg/mL, 1.2 mL</p> <p>Contents: One Prefilled Pen and Product Literature.</p>	
<p><b>5</b> mcg per dose</p>	<p>NDC 70121-1685-1</p> <p><b>Exenatide Injection, USP</b> <b>For Single Patient Use Only</b> 250 mcg/mL, 1.2 mL</p> <p><b>SUBCUTANEOUS USE ONLY</b> Use as directed by your healthcare provider. Throw away 30 days after first use.</p> <p>1 mL contains: 250 mcg exenatide USP, 2.2 mg metacresol, mannitol, glacial acetic acid and sodium acetate trihydrate. <b>Sterile</b></p> <p><b>Rx only</b></p>	<p>Each prefilled pen will deliver 60 doses of 5 mcg each. Before first use, refrigerate at 36° to 46°F (2° to 8°C). After first use, store at a temperature not to exceed 77°F (25°C). Do Not Freeze. Protect from light. Dosage: See Prescribing Information. This package is not child-resistant. Keep out of the reach of children. For more information call toll free: 1-877-835-5472 or visit <a href="http://www.amneal.com">www.amneal.com</a> Mfg. Lic. No. G/28/1539 Manufactured by: <b>Amneal Pharmaceuticals Pvt. Ltd.</b> Parenteral Unit Ahmedabad 382213, INDIA Distributed by: <b>Amneal Pharmaceuticals LLC</b> Bridgewater, NJ 08807 Rev. 07-2023-04</p> 

**NDC 70121-1686-1**  
**Exenatide Injection, 250 mcg/mL (2.4 mL)**  
**Rx only**  
**Amneal Pharmaceuticals LLC**

Mfg. Lic. No. G/28/1539

Rev. 11-2024-04

Distributed by:

**Amneal Pharmaceuticals LLC**

Bridgewater, NJ 08807

Made in INDIA



LOT :

EXP :

NDC 70121-**1686**-1

**Exenatide Injection, USP** **10**

**For Single Patient Use Only**

**mcg**  
per dose

**250 mcg/mL, 2.4 mL**

**REFRIGERATE BEFORE FIRST USE - DO NOT FREEZE.**  
**DO NOT TRANSFER THIS MEDICATION TO A SYRINGE.**

**THROW AWAY 30 DAYS AFTER FIRST USE.**

**EACH PREFILLED PEN WILL DELIVER**  
**60 DOSES OF 10 MCG EACH.**

**Rx only**

**LOT : XXXXXXXX**

**EXP : YYYY-MM**

Area for  
Batch coding details  
(36.25 x 9 mm)

**10  
mcg**  
per dose

**Exenatide Injection, USP**  
**For Single Patient Use Only**  
**250 mcg/mL, 2.4 mL**


Contents: One Prefilled Pen and Product Literature.

Non Varnish Area for  
 Lot No. and Exp. Date.  
 70 x 23 mm

**10  
mcg**  
per dose

NDC 70121-1686-1

**Exenatide Injection, USP**  
**For Single Patient Use Only**  
**250 mcg/mL, 2.4 mL**



**Rx only**

Each prefilled pen will deliver 60 doses of 10 mcg each.  
 SUBCUTANEOUS USE ONLY      REFRIGERATE - DO NOT FREEZE  
 DO NOT TRANSFER THIS MEDICATION TO A SYRINGE.

Pen needles not included.  
 Ask your healthcare provider which pen needle length and gauge is best for you.  
 Use 29 (thin), 30, or 31 (thinner) gauge disposable pen needles.  
 Dispense the enclosed Medication Guide to each patient.

OPEN HERE

**10  
mcg**  
per dose

NDC 70121-1686-1

**Exenatide Injection, USP**  
**For Single Patient Use Only**  
**250 mcg/mL, 2.4 mL**

Contents: One Prefilled Pen and Product Literature.

**10  
mcg**  
per dose

NDC 70121-1686-1


**Exenatide Injection, USP**  
**For Single Patient Use Only**  
**250 mcg/mL, 2.4 mL**

SUBCUTANEOUS USE ONLY  
Use as directed by your healthcare provider.  
Throw away 30 days after first use.  
1 mL contains: 250 mcg exenatide USP; 2.2 mg metacresol, mannitol, glacial acetic acid and sodium acetate trihydrate.  
Sterile

**Rx only**

Each prefilled pen will deliver 60 doses of 10 mcg each.  
 Before first use, refrigerate at 36° to 46°F (2° to 8°C).  
 After first use, store at a temperature not to exceed 77°F (25°C).  
 Do Not Freeze. Protect from light.  
 Dosage: See Prescribing Information.  
 This package is not child-resistant. Keep out of the reach of children.  
 For more information call toll free: 1-877-835-5472 or visit [www.amneal.com](http://www.amneal.com)  
 Mfg. Lic. No. G28/1539  
 Manufactured by: **Amneal Pharmaceuticals Pvt. Ltd.**  
 Parenteral Unit  
 Ahmedabad 382213, INDIA  
 Distributed by: **Amneal Pharmaceuticals LLC**  
 Bridgewater, NJ 08807

Rev. 07-2023-04

  
N 3 70121 16861 4

## EXENATIDE

exenatide injection

### Product Information

<b>Product Type</b>	HUMAN PRESCRIPTION DRUG	<b>Item Code (Source)</b>	NDC:70121-1685
<b>Route of Administration</b>	SUBCUTANEOUS		

### Active Ingredient/Active Moiety

Ingredient Name	Basis of Strength	Strength
EXENATIDE (UNII: 9P1872D4OL) (EXENATIDE - UNII:9P1872D4OL)	EXENATIDE	250 ug in 1 mL

### Inactive Ingredients

Ingredient Name	Strength
ACETIC ACID (UNII: Q40Q9N063P)	
MANNITOL (UNII: 3OWL53L36A)	
METACRESOL (UNII: GGO4Y809LO)	2.2 mg in 1 mL
SODIUM ACETATE (UNII: 4550K0SC9B)	

<b>WATER</b> (UNII: 059QF0KO0R)				
<b>Packaging</b>				
#	Item Code	Package Description	Marketing Start Date	Marketing End Date
1	NDC:70121-1685-1	1 in 1 CARTON	11/22/2024	
1		1.2 mL in 1 CARTRIDGE; Type 2: Prefilled Drug Delivery Device/System (syringe, patch, etc.)		
<b>Marketing Information</b>				
<b>Marketing Category</b>		<b>Application Number or Monograph Citation</b>	<b>Marketing Start Date</b>	<b>Marketing End Date</b>
ANDA		ANDA206697	11/22/2024	

EXENATIDE				
exenatide injection				
Product Information				
Product Type	HUMAN PRESCRIPTION DRUG	Item Code (Source)	NDC:70121-1686	
Route of Administration	SUBCUTANEOUS			
Active Ingredient/Active Moiety				
Ingredient Name		Basis of Strength	Strength	
EXENATIDE (UNII: 9P1872D4OL) (EXENATIDE - UNII:9P1872D4OL)		EXENATIDE	250 ug in 1 mL	
Inactive Ingredients				
Ingredient Name		Strength		
ACETIC ACID (UNII: Q40Q9N063P)				
MANNITOL (UNII: 3OWL53L36A)				
METACRESOL (UNII: GGO4Y809LO)		2.2 mg in 1 mL		
SODIUM ACETATE (UNII: 4550K0SC9B)				
WATER (UNII: 059QF0KO0R)				
Packaging				
#	Item Code	Package Description	Marketing Start Date	Marketing End Date
1	NDC:70121-1686-1	1 in 1 CARTON	11/22/2024	
1		2.4 mL in 1 CARTRIDGE; Type 2: Prefilled Drug Delivery Device/System (syringe, patch, etc.)		

Marketing Information

Marketing Category	Application Number or Monograph Citation	Marketing Start Date	Marketing End Date
ANDA	ANDA206697	11/22/2024	

Labeler - Amneal Pharmaceuticals LLC (827748190)

Establishment

Name	Address	ID/FEI	Business Operations
Amneal Pharmaceuticals Private Limited		860156658	analysis(70121-1685, 70121-1686) , manufacture(70121-1685, 70121-1686) , pack(70121-1685, 70121-1686) , sterilize(70121-1685, 70121-1686)

Revised: 11/2024

Amneal Pharmaceuticals LLC