

**ANNEX I**  
**SUMMARY OF PRODUCT CHARACTERISTICS**

▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

## 1. NAME OF THE MEDICINAL PRODUCT

Trulicity 0.75 mg solution for injection in pre-filled pen

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each pre-filled pen contains 0.75 mg of dulaglutide\* in 0.5 ml solution.

\*Produced in CHO cells by recombinant DNA technology.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection (injection).  
Clear, colourless solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Trulicity is indicated in adults with type 2 diabetes mellitus to improve glycaemic control as:

#### *Monotherapy*

When diet and exercise alone do not provide adequate glycaemic control in patients for whom the use of metformin is considered inappropriate due to intolerance or contraindications.

#### *Add-on therapy*

In combination with other glucose-lowering medicinal products including insulin, when these, together with diet and exercise, do not provide adequate glycaemic control (see section 5.1 for data with respect to different combinations).

### 4.2 Posology and method of administration

#### Posology

#### *Monotherapy*

The recommended dose is 0.75 mg once weekly.

#### *Add-on therapy*

The recommended dose is 1.5 mg once weekly.

For potentially vulnerable populations, such as patients  $\geq 75$  years, 0.75 mg once weekly can be considered as a starting dose.

When Trulicity is added to existing metformin and/or pioglitazone therapy, the current dose of metformin and/or pioglitazone can be continued. When it is added to existing therapy of a sulphonylurea or prandial insulin, a reduction in the dose of sulphonylurea or insulin may be considered to reduce the risk of hypoglycaemia (see sections 4.4 and 4.8).

The use of Trulicity does not require blood glucose self-monitoring. Self-monitoring may be necessary to adjust the dose of sulphonylurea or prandial insulin.

#### *Elderly patients (> 65 years old)*

No dose adjustment is required based on age (see section 5.2). However, the therapeutic experience in patients  $\geq 75$  years is very limited (see section 5.1), and in these patients 0.75 mg once weekly can be considered as a starting dose.

#### *Patients with renal impairment*

No dosage adjustment is required in patients with mild or moderate renal impairment. There is very limited experience in patients with severe renal impairment (eGFR [by CKD-EPI]  $< 30$  ml/min/1.73 m<sup>2</sup>) or end stage renal disease, therefore Trulicity is not recommended in this population (see section 5.2).

#### *Patients with hepatic impairment*

No dosage adjustment is required in patients with hepatic impairment.

#### *Paediatric population*

The safety and efficacy of dulaglutide in children aged less than 18 years have not yet been established. No data are available.

### Method of administration

Trulicity is to be injected subcutaneously in the abdomen, thigh or upper arm. It should not be administered intravenously or intramuscularly.

The dose can be administered at any time of day, with or without meals.

If a dose is missed, it should be administered as soon as possible if there are at least 3 days (72 hours) until the next scheduled dose. If less than 3 days (72 hours) remain before the next scheduled dose, the missed dose should be skipped and the next dose should be administered on the regularly scheduled day. In each case, patients can then resume their regular once weekly dosing schedule.

The day of weekly administration can be changed if necessary, as long as the last dose was administered 3 or more days (72 hours) before.

### **4.3 Contraindications**

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

### **4.4 Special warnings and precautions for use**

Dulaglutide should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis.

Use of GLP-1 receptor agonists may be associated with gastrointestinal adverse reactions. This should be considered when treating patients with impaired renal function since these events, i.e. nausea, vomiting, and/or diarrhoea, may cause dehydration which could cause a deterioration of renal function. Dulaglutide has not been studied in patients with severe gastrointestinal disease, including severe gastroparesis, and is therefore not recommended in these patients.

#### Acute pancreatitis

Use of GLP-1 receptor agonists has been associated with a risk of developing acute pancreatitis. In clinical trials, acute pancreatitis has been reported in association with dulaglutide (see section 4.8).

Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, dulaglutide should be discontinued. If pancreatitis is confirmed, dulaglutide should not be

restarted. In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis (see section 4.8).

#### Hypoglycaemia

Patients receiving dulaglutide in combination with sulphonylurea or insulin may have an increased risk of hypoglycaemia. The risk of hypoglycaemia may be lowered by a reduction in the dose of sulphonylurea or insulin (see sections 4.2 and 4.8).

#### Populations not studied

There is limited experience in patients with congestive heart failure.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per 1.5 mg dose, i.e. essentially 'sodium-free'.

### **4.5 Interaction with other medicinal products and other forms of interaction**

Dulaglutide delays gastric emptying and has the potential to impact the rate of absorption of concomitantly administered oral medicinal products. Dulaglutide should be used with caution in patients receiving oral medicinal products that require rapid gastrointestinal absorption. For some prolonged release formulations, an increased release due to an extended gastric residence time may slightly increase drug exposure.

#### Paracetamol

Following a first dose of 1 and 3 mg dulaglutide, paracetamol  $C_{max}$  was reduced by 36 % and 50 %, respectively, and the median  $t_{max}$  occurred later (3 and 4 hours, respectively). After coadministration with up to 3 mg of dulaglutide at steady state, there were no statistically significant differences on  $AUC_{(0-12)}$ ,  $C_{max}$  or  $t_{max}$  of paracetamol. No dose adjustment of paracetamol is necessary when administered with dulaglutide.

#### Atorvastatin

Coadministration of dulaglutide with atorvastatin decreased  $C_{max}$  and  $AUC_{(0-\infty)}$  up to 70 % and 21 %, respectively, for atorvastatin and its major metabolite *o*-hydroxyatorvastatin. The mean  $t_{1/2}$  of atorvastatin and *o*-hydroxyatorvastatin were increased by 17 % and 41 %, respectively, following dulaglutide administration. These observations are not clinically relevant. No dose adjustment of atorvastatin is necessary when administered with dulaglutide.

#### Digoxin

After coadministration of steady state digoxin with 2 consecutive doses of dulaglutide, overall exposure ( $AUC_{\tau}$ ) and  $t_{max}$  of digoxin were unchanged; and  $C_{max}$  decreased by up to 22 %. This change is not expected to have clinical consequences. No dose adjustment is required for digoxin when administered with dulaglutide.

#### Anti-hypertensives

Coadministration of multiple dulaglutide doses with steady state lisinopril caused no clinically relevant changes in the AUC or  $C_{max}$  of lisinopril. Statistically significant delays in lisinopril  $t_{max}$  of approximately 1 hour were observed on Days 3 and 24 of the study. When a single dose of dulaglutide and metoprolol were coadministered, the AUC and  $C_{max}$  of metoprolol increased by 19 % and 32 %, respectively. While metoprolol  $t_{max}$  was delayed by 1 hour, this change was not statistically significant. These changes were not clinically relevant; therefore no dose adjustment of lisinopril or metoprolol is necessary when administered with dulaglutide.

#### Warfarin

Following dulaglutide coadministration, S- and R-warfarin exposure and R-warfarin  $C_{max}$  were unaffected, and S-warfarin  $C_{max}$  decreased by 22 %.  $AUC_{INR}$  increased by 2 %, which is unlikely to be clinically significant, and there was no effect on maximum international normalised ratio response ( $INR_{max}$ ). The time of international normalised ratio response ( $tINR_{max}$ ) was delayed by 6 hours,

consistent with delays in  $t_{\max}$  of approximately 4 and 6 hours for S- and R-warfarin, respectively. These changes are not clinically relevant. No dose adjustment for warfarin is necessary when given together with dulaglutide.

#### Oral contraceptives

Coadministration of dulaglutide with an oral contraceptive (norgestimate 0.18 mg/ethinyl estradiol 0.025 mg) did not affect the overall exposure to norelgestromin and ethinyl estradiol. Statistically significant reductions in  $C_{\max}$  of 26 % and 13 % and delays in  $t_{\max}$  of 2 and 0.30 hours were observed for norelgestromin and ethinyl estradiol, respectively. These observations are not clinically relevant. No dose adjustment for oral contraceptives is required when given together with dulaglutide.

#### Metformin

Following coadministration of multiple dose dulaglutide with steady state metformin (immediate release formula [IR]), metformin  $AUC_{\tau}$  increased up to 15 % and  $C_{\max}$  decreased up to 12 %, respectively, with no changes in  $t_{\max}$ . These changes are consistent with the gastric emptying delay of dulaglutide and within the pharmacokinetic variability of metformin and thus are not clinically relevant. No dose adjustment for metformin IR is recommended when given with dulaglutide.

#### Sitagliptin

Sitagliptin exposure was unaffected when coadministered with a single dose of dulaglutide. Following coadministration with 2 consecutive doses of dulaglutide, sitagliptin  $AUC_{(0-\tau)}$  and  $C_{\max}$  decreased by approximately 7.4 % and 23.1 %, respectively. Sitagliptin  $t_{\max}$  increased approximately 0.5 hours following coadministration with dulaglutide compared to sitagliptin alone.

Sitagliptin can produce up to 80 % inhibition of DPP-4 over a 24-hour period. Dulaglutide coadministration with sitagliptin increased dulaglutide exposure and  $C_{\max}$  by approximately 38 % and 27 %, respectively, and median  $t_{\max}$  increased approximately 24 hours. Therefore, dulaglutide does have a high degree of protection against DPP-4 inactivation (see section 5.1). The increased exposure may enhance the effects of dulaglutide on blood glucose levels.

### **4.6 Fertility, pregnancy and lactation**

#### Pregnancy

There are no or limited amount of data from the use of dulaglutide in pregnant women. Studies in animals have shown reproductive toxicity (see section 5.3). Therefore, the use of dulaglutide is not recommended during pregnancy.

#### Breast-feeding

It is unknown whether dulaglutide is excreted in human milk. A risk to newborns/infants cannot be excluded. Dulaglutide should not be used during breast-feeding.

#### Fertility

The effect of dulaglutide on fertility in humans is unknown. In the rat, there was no direct effect on mating or fertility following treatment with dulaglutide (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Trulicity has no or negligible influence on the ability to drive or use machines. When it is used in combination with a sulphonylurea or prandial insulin, patients should be advised to take precautions to avoid hypoglycaemia while driving and using machines (see section 4.4).

## 4.8 Undesirable effects

### Summary of safety profile

In the phase II and phase III studies conducted, 4,006 patients were exposed to dulaglutide alone or in combination with other glucose lowering medicinal products. The most frequently reported adverse reactions in clinical trials were gastrointestinal, including nausea, vomiting and diarrhoea. In general these reactions were mild or moderate in severity and transient in nature.

### Tabulated list of adverse reactions

The following adverse reactions have been identified based on evaluation of the full duration of the phase II and phase III clinical studies and are listed in Table 1 as MedDRA preferred term by system organ class and in order of decreasing incidence (very common:  $\geq 1/10$ ; common:  $\geq 1/100$  to  $< 1/10$ ; uncommon:  $\geq 1/1,000$  to  $< 1/100$ ; rare:  $\geq 1/10,000$  to  $< 1/1,000$ ; very rare:  $< 1/10,000$  and not known: cannot be estimated from available data). Within each incidence grouping, adverse reactions are presented in order of decreasing frequency.

Table 1: The frequency of adverse reactions of dulaglutide

<b>System Organ Class</b>	<b>Very common</b>	<b>Common</b>	<b>Uncommon</b>	<b>Rare</b>
<b>Metabolism and nutrition disorders</b>	Hypoglycaemia* (when used in combination with prandial insulin, metformin <sup>†</sup> or metformin plus glimepiride)	Hypoglycaemia* (when used as monotherapy or in combination with metformin plus pioglitazone)		
<b>Gastrointestinal disorders</b>	Nausea, diarrhoea, vomiting <sup>†</sup> , abdominal pain <sup>†</sup>	Decreased appetite, dyspepsia, constipation, flatulence, abdominal distention, gastroesophageal reflux disease, eructation		Acute pancreatitis
<b>General disorders and administration site conditions</b>		Fatigue	Injection site reactions	
<b>Investigations</b>		Sinus tachycardia, first degree atrioventricular block (AVB)		

\* Documented, symptomatic hypoglycaemia and blood glucose  $\leq$  to 3.9 mmol/L

<sup>†</sup> Dulaglutide 1.5 mg dose only. For dulaglutide 0.75 mg, adverse reaction met frequency for next lower incidence grouping.

### Description of selected adverse reactions

#### *Hypoglycaemia*

When dulaglutide 0.75 mg and 1.5 mg were used as monotherapy or in combination with metformin alone or metformin and pioglitazone, the incidences of documented symptomatic hypoglycaemia were 5.9% to 10.9% and the rates were 0.14 to 0.62 events/patient/year, and no episodes of severe hypoglycaemia were reported.

The incidences of documented symptomatic hypoglycaemia when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with a sulphonylurea (plus metformin) were 39.0% and 40.3% and the rates were 1.67 and 1.67 events/patient/year. The severe hypoglycaemia event incidences were 0% and 0.7%, and rates were 0.00 and 0.01 events/patient/year.

The incidences when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with prandial insulin were 85.3% and 80.0% and rates were 35.66 and 31.06 events/patient/year. The severe hypoglycaemia event incidences were 2.4% and 3.4%, and rates were 0.05 and 0.06 events/patient/year.

#### *Gastrointestinal adverse reactions*

Cumulative reporting of gastrointestinal events up to 104 weeks with dulaglutide 0.75mg and 1.5 mg, respectively, included nausea (12.9% and 21.2 %), diarrhoea (10.7% and 13.7 %) and vomiting (6.9% and 11.5 %). These were typically mild or moderate in severity and were reported to peak during the first 2 weeks of treatment and rapidly declined over the next 4 weeks, after which the rate remained relatively constant.

In clinical pharmacology studies conducted in patients with type 2 diabetes mellitus up to 6 weeks, the majority of gastrointestinal events were reported during the first 2-3 days after the initial dose and declined with subsequent doses.

#### *Acute pancreatitis*

The incidence of acute pancreatitis in Phase II and III clinical studies was 0.07% for dulaglutide compared to 0.14% for placebo and 0.19% for comparators with or without additional background antidiabetic therapy.

#### *Pancreatic enzymes*

Dulaglutide is associated with mean increases from baseline in pancreatic enzymes (lipase and/or pancreatic amylase) of 11 % to 21 % (see section 4.4). In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis.

#### *Heart rate increase*

Small mean increases in heart rate of 2 to 4 beats per minute (bpm) and a 1.3% and 1.4 % incidence of sinus tachycardia, with a concomitant increase from baseline  $\geq 15$  bpm, were observed with dulaglutide 0.75mg and 1.5 mg, respectively.

#### *First degree AV block/PR interval prolongation*

Small mean increases from baseline in PR interval of 2 to 3 msec and a 1.5% and 2.4 % incidence of first-degree AV block were observed with dulaglutide 0.75 mg and 1.5 mg, respectively.

#### *Immunogenicity*

In clinical studies, treatment with dulaglutide was associated with a 1.6 % incidence of treatment emergent dulaglutide anti-drug antibodies, indicating that the structural modifications in the GLP-1 and modified IgG4 parts of the dulaglutide molecule, together with high homology with native GLP-1 and native IgG4, minimise the risk of immune response against dulaglutide. Patients with dulaglutide anti-drug antibodies generally had low titres, and although the number of patients developing dulaglutide anti-drug antibodies was low, examination of the phase III data revealed no clear impact of dulaglutide anti-drug antibodies on changes in HbA1c.

#### *Hypersensitivity*

In the phase II and phase III clinical studies, systemic hypersensitivity events (e.g., urticaria, edema) were reported in 0.5 % of patients receiving dulaglutide. None of the patients with systemic hypersensitivity developed dulaglutide anti-drug antibodies.

### *Injection site reactions*

Injection site adverse events were reported in 1.9 % of patients receiving dulaglutide. Potentially immune-mediated injection site adverse events (e.g., rash, erythema) were reported in 0.7 % of patients and were usually mild.

### *Discontinuation due to an adverse event*

In studies of 26 weeks duration, the incidence of discontinuation due to adverse events was 2.6% (0.75 mg) and 6.1% (1.5 mg) for dulaglutide versus 3.7 % for placebo. Through the full study duration (up to 104 weeks), the incidence of discontinuation due to adverse events was 5.1% (0.75 mg) and 8.4 % (1.5 mg) for dulaglutide. The most frequent adverse reactions leading to discontinuation for 0.75 mg and 1.5 mg dulaglutide, respectively, were nausea (1.0%, 1.9 %), diarrhoea (0.5%, 0.6 %), and vomiting (0.4%, 0.6 %), and were generally reported within the first 4-6 weeks.

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## **4.9 Overdose**

Effects of overdose with dulaglutide in clinical studies have included gastrointestinal disorders and hypoglycaemia. In the event of overdose, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: {not yet assigned}, ATC code: {not yet assigned}.

#### Mechanism of action

Dulaglutide is a long-acting glucagon-like peptide 1 (GLP-1) receptor agonist. The molecule consists of 2 identical disulfide-linked chains, each containing a modified human GLP-1 analogue sequence covalently linked to a modified human immunoglobulin G4 (IgG4) heavy chain fragment (Fc) by a small peptide linker. The GLP-1 analog portion of dulaglutide is approximately 90 % homologous to native human GLP-1 (7-37). Native GLP-1 has a half-life of 1.5-2 minutes due to degradation by DPP-4 and renal clearance. In contrast to native GLP-1, dulaglutide is resistant to degradation by DPP-4, and has a large size that slows absorption and reduces renal clearance. These engineering features result in a soluble formulation and a prolonged half-life of 4.7 days, which makes it suitable for once-weekly subcutaneous administration. In addition, the dulaglutide molecule was engineered to prevent the Fc $\gamma$  receptor-dependent immune response and to reduce its immunogenic potential.

Dulaglutide exhibits several antihyperglycaemic actions of GLP-1. In the presence of elevated glucose concentrations, dulaglutide increases intracellular cyclic AMP (cAMP) in pancreatic beta cells leading to insulin release. Dulaglutide suppresses glucagon secretion which is known to be inappropriately elevated in patients with type 2 diabetes. Lower glucagon concentrations lead to decreased hepatic glucose output. Dulaglutide also slows gastric emptying.

#### Pharmacodynamic effects

Dulaglutide improves glycaemic control through the sustained effects of lowering fasting, pre-meal and postprandial glucose concentrations in patients with type 2 diabetes starting after the first dulaglutide administration and is sustained throughout the once weekly dosing interval.

A pharmacodynamic study with dulaglutide demonstrated, in patients with type 2 diabetes, a restoration of first phase insulin secretion to a level that exceeded levels observed in healthy subjects



on placebo, and improved second phase insulin secretion in response to an intravenous bolus of glucose. In the same study, a single 1.5 mg dose of dulaglutide appeared to increase maximal insulin secretion from the  $\beta$ -cells, and to enhance  $\beta$ -cell function in subjects with type 2 diabetes mellitus as compared with placebo.

Consistent with the pharmacokinetic profile, dulaglutide has a pharmacodynamic profile suitable for once weekly administration (see section 5.2).

### Clinical efficacy and safety

#### *Glycaemic control*

The safety and efficacy of dulaglutide was evaluated in six randomised, controlled, phase III trials involving 5,171 patients with type 2 diabetes. Of these, 958 were  $\geq 65$  years of which 93 were  $\geq 75$  years. These studies included 3,136 dulaglutide-treated patients, of whom 1,719 were treated with Trulicity 1.5 mg weekly and 1,417 were treated with Trulicity 0.75 mg weekly. In all studies, dulaglutide produced clinically significant improvements in glycaemic control as measured by glycosylated haemoglobin A1c (HbA1c).

#### *Monotherapy*

Dulaglutide was studied in a 52 week active controlled monotherapy study in comparison to metformin. Trulicity 1.5 mg and 0.75 mg were superior to metformin (1500-2000 mg/day) in the reduction in HbA1c and a significantly greater proportion of patients reached an HbA1c target of  $< 7.0\%$  and  $\leq 6.5\%$  with Trulicity 1.5 mg and Trulicity 0.75 mg compared to metformin at 26 weeks.

Table 2: Results of a 52 week active controlled monotherapy study with two doses of dulaglutide in comparison to metformin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	$<7.0\%$ (%)	$\leq 6.5\%$ (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.78 <sup>††</sup>	61.5 <sup>#</sup>	46.0 <sup>##</sup>	-1.61	-2.29
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.71 <sup>††</sup>	62.6 <sup>#</sup>	40.0 <sup>#</sup>	-1.46	-1.36 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.56	53.6	29.8	-1.34	-2.22
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.70 <sup>††</sup>	60.0 <sup>#</sup>	42.3 <sup>##</sup>	-1.56 <sup>#</sup>	-1.93
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.55 <sup>†</sup>	53.2	34.7	-1.00	-1.09 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.51	48.3	28.3	-1.15	-2.20

† multiplicity adjusted 1-sided p-value  $< 0.025$ , for noninferiority; †† multiplicity adjusted 1-sided p-value  $< 0.025$ , for superiority of dulaglutide to metformin, assessed for HbA1c only  
<sup>#</sup> p  $< 0.05$ , <sup>##</sup> p  $< 0.001$  dulaglutide treatment group compared to metformin

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and metformin were 0.62, 0.15, and 0.09 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed.

#### *Combination therapy with metformin*

The safety and efficacy of dulaglutide was investigated in a placebo and active controlled (sitagliptin 100 mg daily) study of 104 weeks duration, all in combination with metformin. Treatment with Trulicity 1.5 mg and 0.75 mg resulted in a superior reduction in HbA1c compared to sitagliptin at

52 weeks, accompanied by a significantly greater proportion of patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 %. These effects were sustained to the end of the study (104 weeks).

Table 3: Results of a 104 week placebo and active controlled study with two doses of dulaglutide in comparison to sitagliptin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0 % (%)	≤6.5 % (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.22 <sup>††##</sup>	60.9 <sup>**##</sup>	46.7 <sup>**##</sup>	-2.38 <sup>**##</sup>	-3.18 <sup>**##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-1.01 <sup>††##</sup>	55.2 <sup>**##</sup>	31.0 <sup>**##</sup>	-1.97 <sup>**##</sup>	-2.63 <sup>**##</sup>
Placebo (n= 177)	8.10	0.03	21.0	12.5	-0.49	-1.47
Sitagliptin 100 mg once daily (n=315)	8.09	-0.61	37.8	21.8	-0.97	-1.46
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.10 <sup>††</sup>	57.6 <sup>##</sup>	41.7 <sup>##</sup>	-2.38 <sup>##</sup>	-3.03 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.87 <sup>††</sup>	48.8 <sup>##</sup>	29.0 <sup>##</sup>	-1.63 <sup>##</sup>	-2.60 <sup>##</sup>
Sitagliptin 100 mg once daily (n=315)	8.09	-0.39	33.0	19.2	-0.90	-1.53
<b>104 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-0.99 <sup>††</sup>	54.3 <sup>##</sup>	39.1 <sup>##</sup>	-1.99 <sup>##</sup>	-2.88 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.71 <sup>††</sup>	44.8 <sup>##</sup>	24.2 <sup>##</sup>	-1.39 <sup>##</sup>	-2.39
Sitagliptin 100 mg once daily (n=315)	8.09	-0.32	31.1	14.1	-0.47	-1.75

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide compared to sitagliptin, assessed only for HbA1c at 52 and 104 weeks

## multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\*\* p < 0.001 dulaglutide treatment group compared to placebo

## p < 0.001 dulaglutide treatment group compared to sitagliptin

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and sitagliptin were 0.19, 0.18, and 0.17 episodes/patient/year, respectively. No cases of severe hypoglycaemia with dulaglutide were observed.

The safety and efficacy of dulaglutide was also investigated in an active controlled study (liraglutide 1.8 mg daily) of 26 weeks duration, both in combination with metformin. Treatment with Trulicity 1.5 mg resulted in similar lowering of HbA1c and patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 % compared to liraglutide.

Table 4: Results of a 26 week active controlled study of one dose of dulaglutide in comparison to liraglutide

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0 % (%)	≤6.5 % (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=299)	8.06	-1.42 <sup>‡</sup>	68.3	54.6	-1.93	-2.90 <sup>#</sup>
Liraglutide <sup>+</sup> 1.8 mg daily (n=300)	8.05	-1.36	67.9	50.9	-1.90	-3.61

<sup>‡</sup> 1-sided p-value  $p < 0.001$ , for noninferiority of dulaglutide compared to liraglutide, assessed only for HbA1c.

<sup>#</sup>  $p < 0.05$  dulaglutide treatment group compared to liraglutide.

<sup>+</sup> Patients randomised to liraglutide were initiated at a dose of 0.6 mg/day. After Week 1, patients were up-titrated to 1.2 mg/day and then at Week 2 to 1.8 mg/day.

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg was 0.12 episodes/patient/year and with liraglutide was 0.29 episodes/patient/year. No cases of severe hypoglycaemia were observed

#### Combination therapy with metformin and sulphonylurea

In an active controlled study of 78 weeks duration, dulaglutide was compared to insulin glargine, both on a background of metformin and a sulphonylurea. At 52 weeks, Trulicity 1.5 mg demonstrated superior lowering in HbA1c to insulin glargine which was maintained at 78 weeks; whereas lowering in HbA1c with Trulicity 0.75 mg was non-inferior to insulin glargine. With Trulicity 1.5 mg a significantly higher percentage of patients reached a target HbA1c of < 7.0 % or ≤ 6.5 % at 52 and 78 weeks compared to insulin glargine.

Table 5: Results of a 78 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-1.08 <sup>††</sup>	53.2 <sup>##</sup>	27.0 <sup>##</sup>	-1.50	-1.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.76 <sup>†</sup>	37.1	22.5 <sup>#</sup>	-0.87 <sup>##</sup>	-1.33 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.63	30.9	13.5	-1.76	1.44
<b>78 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-0.90 <sup>††</sup>	49.0 <sup>##</sup>	28.1 <sup>##</sup>	-1.10 <sup>#</sup>	-1.96 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.62 <sup>†</sup>	34.1	22.1	-0.58 <sup>##</sup>	-1.54 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.59	30.5	16.6	-1.58	1.28

<sup>†</sup> multiplicity adjusted 1-sided p-value < 0.025, for noninferiority; <sup>††</sup> multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

<sup>#</sup>  $p < 0.05$ , <sup>##</sup>  $p < 0.001$  dulaglutide treatment group compared to insulin glargine

<sup>+</sup> Insulin glargine doses were adjusted utilising an algorithm with a fasting plasma glucose target of < 5.6 mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 1.67, 1.67, and 3.02 episodes/patient/year, respectively. Two cases of severe hypoglycaemia were observed with Trulicity 1.5mg and two cases of severe hypoglycaemia were observed with insulin glargine.

*Combination therapy with metformin and pioglitazone*

In a placebo and active (exenatide twice daily) controlled study, both in combination with metformin and pioglitazone, Trulicity 1.5 mg and 0.75 mg demonstrated superiority for HbA1c reduction in comparison to placebo and exenatide, accompanied by a significantly a greater percentage of patients achieving HbA1c targets of < 7.0 % or ≤ 6.5 %

Table 6: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to exenatide

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0% (%)	≤6.5% (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.51 <sup>††, ††</sup>	78.2 <sup>**##</sup>	62.7 <sup>**##</sup>	-2.36 <sup>**##</sup>	-1.30 <sup>**</sup>
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.30 <sup>††/††</sup>	65.8 <sup>**##</sup>	53.2 <sup>**##</sup>	-1.90 <sup>**##</sup>	0.20 <sup>*/##</sup>
Placebo (n=141)	8.06	-0.46	42.9	24.4	-0.26	1.24
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.99	52.3	38.0	-1.35	-1.07
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.36 <sup>††</sup>	70.8 <sup>##</sup>	57.2 <sup>##</sup>	-2.04 <sup>##</sup>	-1.10
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.07 <sup>††</sup>	59.1 <sup>#</sup>	48.3 <sup>##</sup>	-1.58 <sup>#</sup>	0.44 <sup>#</sup>
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.80	49.2	34.6	-1.03	-0.80

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to exenatide, assessed for HbA1c only

†† multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\* p < 0.05, \*\*p < 0.001 dulaglutide treatment group compared to placebo

# p < 0.05, ##p < 0.001 dulaglutide treatment group compared to exenatide

+ Exenatide dose was 5 mcg twice daily for first 4 weeks and 10 mcg twice daily thereafter

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and exenatide twice daily were 0.19, 0.14, and 0.75 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed for dulaglutide and two cases of severe hypoglycaemia were observed with exenatide twice daily.

*Combination therapy with prandial insulin with or without metformin*

In this study, patients on 1 or 2 insulin injections per day prior to study entry, discontinued their prestudy insulin regimen and were randomised to dulaglutide once weekly or insulin glargine once daily, both in combination with prandial insulin lispro three times daily, with or without metformin. At 26 weeks, both Trulicity 1.5 mg and 0.75mg were superior to insulin glargine in lowering of HbA1c and this effect was sustained at 52 weeks. . A greater percentage of patients achieved HbA1c targets of < 7.0 % or ≤ 6.5 % at 26 weeks and < 7.0 % at 52 weeks than with insulin glargine.

Table 7: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.64 <sup>††</sup>	67.6 <sup>#</sup>	48.0 <sup>#</sup>	-0.27 <sup>###</sup>	-0.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.59 <sup>††</sup>	69.0 <sup>#</sup>	43.0	0.22 <sup>###</sup>	0.18 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.41	56.8	37.5	-1.58	2.33
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.48 <sup>††</sup>	58.5 <sup>#</sup>	36.7	0.08 <sup>###</sup>	-0.35 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.42 <sup>††</sup>	56.3	34.7	0.41 <sup>###</sup>	0.86 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.23	49.3	30.4	-1.01	2.89

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

# p < 0.05, ### p < 0.001 dulaglutide treatment group compared to insulin glargine

+ Insulin glargine doses were adjusted utilizing an algorithm with a fasting plasma glucose target of < 5.6 mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 31.06, 35.66, and 40.95 episodes/patient/year, respectively. Ten patients reported severe hypoglycaemia with Trulicity 1.5 mg, seven with Trulicity 0.75 mg, and fifteen with insulin glargine.

#### *Fasting blood glucose*

Treatment with dulaglutide resulted in significant reductions from baseline in fasting blood glucose. The majority of the effect on fasting blood glucose concentrations occurred by 2 weeks. The improvement in fasting glucose was sustained through the longest study duration of 104 weeks.

#### *Postprandial glucose*

Treatment with dulaglutide resulted in significant reductions in mean post prandial glucose from baseline (changes from baseline to primary time point -1.95 mmol/L to -4.23 mmol/L).

#### *Beta-cell function*

Clinical studies with dulaglutide have indicated enhanced beta-cell function as measured by homeostasis model assessment (HOMA2-%B). The durability of effect on beta-cell function was maintained through the longest study duration of 104 weeks.

#### *Body weight*

Trulicity 1.5 mg was associated with sustained weight reduction over the duration of studies (from baseline to final time point -0.35 kg to -2.90 kg). Changes in body weight with Trulicity 0.75 mg ranged from 0.86 kg to -2.63 kg. Reduction in body weight was observed in patients treated with dulaglutide irrespective of nausea, though the reduction was numerically larger in the group with nausea.

#### *Patient reported outcomes*

Dulaglutide significantly improved total treatment satisfaction compared to exenatide twice daily. In addition, there was significantly lower perceived frequency of hyperglycaemia and hypoglycaemia compared to exenatide twice daily.

### *Blood pressure*

The effect of dulaglutide on blood pressure as assessed by Ambulatory Blood Pressure Monitoring was evaluated in a study of 755 patients with type 2 diabetes. Treatment with dulaglutide provided reductions in systolic blood pressure (SBP) (-2.8 mmHg difference compared to placebo) at 16 weeks. There was no difference in diastolic blood pressure (DBP). Similar results for SBP and DBP were demonstrated at the final 26 week time point of the study.

### *Cardiovascular Evaluation*

In a meta-analysis of phase II and III studies, a total of 51 patients (dulaglutide: 26 [N = 3,885]; all comparators: 25 [N = 2,125]) experienced at least one cardiovascular (CV) event (death due to CV causes, nonfatal MI, nonfatal stroke, or hospitalisation for unstable angina). The results showed that there was no increase in CV risk with dulaglutide compared with control therapies (HR: 0.57; CI: [0.30, 1.10]).

### Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies with dulaglutide in one or more subsets of the paediatric population in the treatment of type 2 diabetes mellitus (see section 4.2 for information on paediatric use).

## **5.2 Pharmacokinetic properties**

### Absorption

Following subcutaneous administration to patients with type 2 diabetes, dulaglutide reaches peak plasma concentrations in 48 hours. The mean peak ( $C_{max}$ ) and total (AUC) exposures were approximately 114 ng/ml and 14,000 ng·h/ml, respectively, after multiple subcutaneous 1.5 mg doses of dulaglutide in patients with type 2 diabetes. Steady-state plasma concentrations were achieved between 2 to 4 weeks of once-weekly administration of dulaglutide (1.5 mg). Exposures after subcutaneous administration of single dulaglutide (1.5 mg) doses in the abdomen, thigh, or upper arm were comparable. The mean absolute bioavailability of dulaglutide following single-dose subcutaneous administration of single 1.5 mg and 0.75 mg doses was 47 % and 65%, respectively.

### Distribution

The mean volume of distribution after subcutaneous administration of dulaglutide 0.75 mg and 1.5 mg at steady state in patients with type 2 diabetes mellitus were approximately 19.2 L and 17.4 L.

### Biotransformation

Dulaglutide is presumed to be degraded into its component amino acids by general protein catabolism pathways.

### Elimination

The mean apparent clearance of dulaglutide 0.75 mg and 1.5 mg at steady state was 0.073 L/h and 0.107 L/h with an elimination half-life of 4.5 and 4.7 days, respectively.

### Special populations

#### *Elderly patients (> 65 years old)*

Age had no clinically relevant effect on the pharmacokinetic and pharmacodynamic properties of dulaglutide.

#### *Gender and race*

Gender and race had no clinically meaningful effect on the pharmacokinetics of dulaglutide.

#### *Body weight or body mass index*

Pharmacokinetic analyses have demonstrated a statistically significant inverse relationship between body weight or body mass index (BMI) and dulaglutide exposure, although there was no clinically relevant impact of weight or BMI on glycaemic control.

#### *Patients with renal impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study and were generally similar between healthy subjects and patients with mild to severe renal impairment (CrCl < 30 ml/min), including end stage renal disease (requiring dialysis). In clinical studies, the dulaglutide safety profile in patients with moderate renal impairment was similar to the overall T2DM population. These studies did not include patients with severe renal impairment or end stage renal disease.

#### *Patients with hepatic impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study, where subjects with hepatic impairment had statistically significant decreases in dulaglutide exposure of up to 30 % to 33 % for mean C<sub>max</sub> and AUC, respectively, compared to healthy controls. There was a general increase in t<sub>max</sub> of dulaglutide with increased hepatic impairment. However, no trend in dulaglutide exposure was observed relative to the degree of hepatic impairment. These effects were not considered to be clinically relevant.

#### *Paediatric population*

Studies characterising the pharmacokinetics of dulaglutide in paediatric patients have not been performed.

### **5.3 Preclinical safety data**

Non-clinical data reveal no special hazards for humans based on conventional studies of safety pharmacology or repeat-dose toxicity.

In a 6-month carcinogenicity study in transgenic mice, there was no tumorigenic response. In a 2-year carcinogenicity study in rats, at  $\geq 7$  times the human clinical exposure following 1.5 mg dulaglutide per week, dulaglutide caused statistically significant, dose-related increases in the incidence of thyroid C-cell tumours (adenomas and carcinomas combined). The clinical relevance of these findings is currently unknown.

During the fertility studies, a reduction in the number of corpora lutea and prolonged oestrous cycle were observed at dose levels that were associated with decreased food intake and body weight gain in maternal animals; however, no effects on indices of fertility and conception or embryonic development were observed. In reproductive toxicology studies, skeletal effects and a reduction in foetal growth were observed in the rat and rabbit at exposures of dulaglutide 11- to 44-fold higher than those proposed clinically, but no foetal malformations were observed. Treatment of rats throughout pregnancy and lactation produced memory deficits in female offspring at exposures that were 16-fold higher than those proposed clinically.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Sodium citrate  
Citric acid, anhydrous  
Mannitol  
Polysorbate 80  
Water for injections

### **6.2 Incompatibilities**

In the absence of compatibility studies this medicinal product must not be mixed with other medicinal products.

### **6.3 Shelf life**

2 years

### **6.4 Special precautions for storage**

Store in a refrigerator (2°C – 8°C).

Do not freeze.

Store in original package in order to protect from light.

#### In use:

Trulicity may be stored unrefrigerated for up to 14 days at a temperature not above 30°C.

### **6.5 Nature and contents of container**

Glass syringe (type I) encased in a disposable pen.

Each pre-filled pen contains 0.5 ml of solution.

Packs of 2 and 4 pre-filled pens and multipack of 12 (3 packs of 4) pre-filled pens. Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

#### Instructions for use

The pre-filled pen is for single-use only.

The instructions for using the pen, included with the package leaflet, must be followed carefully.

Trulicity should not be used if particles appear or if the solution is cloudy and/or coloured.

Trulicity that has been frozen must not be used.

## **7. MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V., Grootslag 1-5, NL-3991 RA Houten, The Netherlands.

## **8. MARKETING AUTHORISATION NUMBER**

EU/1/14/956/001

EU/1/14/956/002

EU/1/14/956/003

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation:

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>



▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

## 1. NAME OF THE MEDICINAL PRODUCT

Trulicity 1.5 mg solution for injection in pre-filled pen

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each pre-filled pen contains 1.5 mg of dulaglutide\* in 0.5 ml solution.

\*Produced in CHO cells by recombinant DNA technology.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection (injection).  
Clear, colourless solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Trulicity is indicated in adults with type 2 diabetes mellitus to improve glycaemic control as:

#### *Monotherapy*

When diet and exercise alone do not provide adequate glycaemic control in patients for whom the use of metformin is considered inappropriate due to intolerance or contraindications.

#### *Add-on therapy*

In combination with other glucose-lowering medicinal products including insulin, when these, together with diet and exercise, do not provide adequate glycaemic control (see section 5.1 for data with respect to different combinations).

### 4.2 Posology and method of administration

#### Posology

#### *Monotherapy*

The recommended dose is 0.75 mg once weekly.

#### *Add-on therapy*

The recommended dose is 1.5 mg once weekly.

For potentially vulnerable populations, such as patients  $\geq 75$  years, 0.75 mg once weekly can be considered as a starting dose.

When Trulicity is added to existing metformin and/or pioglitazone therapy, the current dose of metformin and/or pioglitazone can be continued. When it is added to existing therapy of a sulphonylurea or prandial insulin, a reduction in the dose of sulphonylurea or insulin may be considered to reduce the risk of hypoglycaemia (see sections 4.4 and 4.8).

The use of Trulicity does not require blood glucose self-monitoring. Self-monitoring may be necessary to adjust the dose of sulphonylurea or prandial insulin.

#### *Elderly patients (> 65 years old)*

No dose adjustment is required based on age (see section 5.2). However, the therapeutic experience in patients  $\geq 75$  years is very limited (see section 5.1), and in these patients 0.75 mg once weekly can be considered as a starting dose.

#### *Patients with renal impairment*

No dosage adjustment is required in patients with mild or moderate renal impairment. There is very limited experience in patients with severe renal impairment (eGFR [by CKD-EPI]  $< 30$  ml/min/1.73 m<sup>2</sup>) or end stage renal disease, therefore Trulicity is not recommended in this population (see section 5.2).

#### *Patients with hepatic impairment*

No dosage adjustment is required in patients with hepatic impairment.

#### *Paediatric population*

The safety and efficacy of dulaglutide in children aged less than 18 years have not yet been established. No data are available.

### Method of administration

Trulicity is to be injected subcutaneously in the abdomen, thigh or upper arm. It should not be administered intravenously or intramuscularly.

The dose can be administered at any time of day, with or without meals.

If a dose is missed, it should be administered as soon as possible if there are at least 3 days (72 hours) until the next scheduled dose. If less than 3 days (72 hours) remain before the next scheduled dose, the missed dose should be skipped and the next dose should be administered on the regularly scheduled day. In each case, patients can then resume their regular once weekly dosing schedule.

The day of weekly administration can be changed if necessary, as long as the last dose was administered 3 or more days (72 hours) before.

### **4.3 Contraindications**

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

### **4.4 Special warnings and precautions for use**

Dulaglutide should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis.

Use of GLP-1 receptor agonists may be associated with gastrointestinal adverse reactions. This should be considered when treating patients with impaired renal function since these events, i.e. nausea, vomiting, and/or diarrhoea, may cause dehydration which could cause a deterioration of renal function. Dulaglutide has not been studied in patients with severe gastrointestinal disease, including severe gastroparesis, and is therefore not recommended in these patients.

#### Acute pancreatitis

Use of GLP-1 receptor agonists has been associated with a risk of developing acute pancreatitis. In clinical trials, acute pancreatitis has been reported in association with dulaglutide (see section 4.8).

Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, dulaglutide should be discontinued. If pancreatitis is confirmed, dulaglutide should not be

restarted. In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis (see section 4.8).

#### Hypoglycaemia

Patients receiving dulaglutide in combination with sulphonylurea or insulin may have an increased risk of hypoglycaemia. The risk of hypoglycaemia may be lowered by a reduction in the dose of sulphonylurea or insulin (see sections 4.2 and 4.8).

#### Populations not studied

There is limited experience in patients with congestive heart failure.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per 1.5 mg dose, i.e. essentially 'sodium-free'.

### **4.5 Interaction with other medicinal products and other forms of interaction**

Dulaglutide delays gastric emptying and has the potential to impact the rate of absorption of concomitantly administered oral medicinal products. Dulaglutide should be used with caution in patients receiving oral medicinal products that require rapid gastrointestinal absorption. For some prolonged release formulations, an increased release due to an extended gastric residence time may slightly increase drug exposure.

#### Paracetamol

Following a first dose of 1 and 3 mg dulaglutide, paracetamol  $C_{max}$  was reduced by 36 % and 50 %, respectively, and the median  $t_{max}$  occurred later (3 and 4 hours, respectively). After coadministration with up to 3 mg of dulaglutide at steady state, there were no statistically significant differences on  $AUC_{(0-12)}$ ,  $C_{max}$  or  $t_{max}$  of paracetamol. No dose adjustment of paracetamol is necessary when administered with dulaglutide.

#### Atorvastatin

Coadministration of dulaglutide with atorvastatin decreased  $C_{max}$  and  $AUC_{(0-\infty)}$  up to 70 % and 21 %, respectively, for atorvastatin and its major metabolite *o*-hydroxyatorvastatin. The mean  $t_{1/2}$  of atorvastatin and *o*-hydroxyatorvastatin were increased by 17 % and 41 %, respectively, following dulaglutide administration. These observations are not clinically relevant. No dose adjustment of atorvastatin is necessary when administered with dulaglutide.

#### Digoxin

After coadministration of steady state digoxin with 2 consecutive doses of dulaglutide, overall exposure ( $AUC_{\tau}$ ) and  $t_{max}$  of digoxin were unchanged; and  $C_{max}$  decreased by up to 22 %. This change is not expected to have clinical consequences. No dose adjustment is required for digoxin when administered with dulaglutide.

#### Anti-hypertensives

Coadministration of multiple dulaglutide doses with steady state lisinopril caused no clinically relevant changes in the AUC or  $C_{max}$  of lisinopril. Statistically significant delays in lisinopril  $t_{max}$  of approximately 1 hour were observed on Days 3 and 24 of the study. When a single dose of dulaglutide and metoprolol were coadministered, the AUC and  $C_{max}$  of metoprolol increased by 19 % and 32 %, respectively. While metoprolol  $t_{max}$  was delayed by 1 hour, this change was not statistically significant. These changes were not clinically relevant; therefore no dose adjustment of lisinopril or metoprolol is necessary when administered with dulaglutide.

#### Warfarin

Following dulaglutide coadministration, S- and R-warfarin exposure and R-warfarin  $C_{max}$  were unaffected, and S-warfarin  $C_{max}$  decreased by 22 %.  $AUC_{INR}$  increased by 2 %, which is unlikely to be clinically significant, and there was no effect on maximum international normalised ratio response ( $INR_{max}$ ). The time of international normalised ratio response ( $tINR_{max}$ ) was delayed by 6 hours,

consistent with delays in  $t_{\max}$  of approximately 4 and 6 hours for S- and R-warfarin, respectively. These changes are not clinically relevant. No dose adjustment for warfarin is necessary when given together with dulaglutide.

#### Oral contraceptives

Coadministration of dulaglutide with an oral contraceptive (norgestimate 0.18 mg/ethinyl estradiol 0.025 mg) did not affect the overall exposure to norelgestromin and ethinyl estradiol. Statistically significant reductions in  $C_{\max}$  of 26 % and 13 % and delays in  $t_{\max}$  of 2 and 0.30 hours were observed for norelgestromin and ethinyl estradiol, respectively. These observations are not clinically relevant. No dose adjustment for oral contraceptives is required when given together with dulaglutide.

#### Metformin

Following coadministration of multiple dose dulaglutide with steady state metformin (immediate release formula [IR]), metformin  $AUC_{\tau}$  increased up to 15 % and  $C_{\max}$  decreased up to 12 %, respectively, with no changes in  $t_{\max}$ . These changes are consistent with the gastric emptying delay of dulaglutide and within the pharmacokinetic variability of metformin and thus are not clinically relevant. No dose adjustment for metformin IR is recommended when given with dulaglutide.

#### Sitagliptin

Sitagliptin exposure was unaffected when coadministered with a single dose of dulaglutide. Following coadministration with 2 consecutive doses of dulaglutide, sitagliptin  $AUC_{(0-\tau)}$  and  $C_{\max}$  decreased by approximately 7.4 % and 23.1 %, respectively. Sitagliptin  $t_{\max}$  increased approximately 0.5 hours following coadministration with dulaglutide compared to sitagliptin alone.

Sitagliptin can produce up to 80 % inhibition of DPP-4 over a 24-hour period. Dulaglutide coadministration with sitagliptin increased dulaglutide exposure and  $C_{\max}$  by approximately 38 % and 27 %, respectively, and median  $t_{\max}$  increased approximately 24 hours. Therefore, dulaglutide does have a high degree of protection against DPP-4 inactivation (see section 5.1). The increased exposure may enhance the effects of dulaglutide on blood glucose levels.

### **4.6 Fertility, pregnancy and lactation**

#### Pregnancy

There are no or limited amount of data from the use of dulaglutide in pregnant women. Studies in animals have shown reproductive toxicity (see section 5.3). Therefore, the use of dulaglutide is not recommended during pregnancy.

#### Breast-feeding

It is unknown whether dulaglutide is excreted in human milk. A risk to newborns/infants cannot be excluded. Dulaglutide should not be used during breast-feeding.

#### Fertility

The effect of dulaglutide on fertility in humans is unknown. In the rat, there was no direct effect on mating or fertility following treatment with dulaglutide (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Trulicity has no or negligible influence on the ability to drive or use machines. When it is used in combination with a sulphonylurea or prandial insulin, patients should be advised to take precautions to avoid hypoglycaemia while driving and using machines (see section 4.4).

## 4.8 Undesirable effects

### Summary of safety profile

In the phase II and phase III studies conducted, 4,006 patients were exposed to dulaglutide alone or in combination with other glucose lowering medicinal products. The most frequently reported adverse reactions in clinical trials were gastrointestinal, including nausea, vomiting and diarrhoea. In general these reactions were mild or moderate in severity and transient in nature.

### Tabulated list of adverse reactions

The following adverse reactions have been identified based on evaluation of the full duration of the phase II and phase III clinical studies and are listed in Table 1 as MedDRA preferred term by system organ class and in order of decreasing incidence (very common:  $\geq 1/10$ ; common:  $\geq 1/100$  to  $< 1/10$ ; uncommon:  $\geq 1/1,000$  to  $< 1/100$ ; rare:  $\geq 1/10,000$  to  $< 1/1,000$ ; very rare:  $< 1/10,000$  and not known: cannot be estimated from available data). Within each incidence grouping, adverse reactions are presented in order of decreasing frequency.

Table 1: The frequency of adverse reactions of dulaglutide

<b>System Organ Class</b>	<b>Very common</b>	<b>Common</b>	<b>Uncommon</b>	<b>Rare</b>
<b>Metabolism and nutrition disorders</b>	Hypoglycaemia* (when used in combination with prandial insulin, metformin <sup>†</sup> or metformin plus glimepiride)	Hypoglycaemia* (when used as monotherapy or in combination with metformin plus pioglitazone)		
<b>Gastrointestinal disorders</b>	Nausea, diarrhoea, vomiting <sup>†</sup> , abdominal pain <sup>†</sup>	Decreased appetite, dyspepsia, constipation, flatulence, abdominal distention, gastroesophageal reflux disease, eructation		Acute pancreatitis
<b>General disorders and administration site conditions</b>		Fatigue	Injection site reactions	
<b>Investigations</b>		Sinus tachycardia, first degree atrioventricular block (AVB)		

\* Documented, symptomatic hypoglycaemia and blood glucose  $\leq$  to 3.9 mmol/L

<sup>†</sup> Dulaglutide 1.5 mg dose only. For dulaglutide 0.75 mg, adverse reaction met frequency for next lower incidence grouping.

### Description of selected adverse reactions

#### *Hypoglycaemia*

When dulaglutide 0.75 mg and 1.5 mg were used as monotherapy or in combination with metformin alone or metformin and pioglitazone, the incidences of documented symptomatic hypoglycaemia were 5.9% to 10.9% and the rates were 0.14 to 0.62 events/patient/year, and no episodes of severe hypoglycaemia were reported.

The incidences of documented symptomatic hypoglycaemia when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with a sulphonylurea (plus metformin) were 39.0% and 40.3% and the rates were 1.67 and 1.67 events/patient/year. The severe hypoglycaemia event incidences were 0% and 0.7%, and rates were 0.00 and 0.01 events/patient/year.

The incidences when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with prandial insulin were 85.3% and 80.0% and rates were 35.66 and 31.06 events/patient/year. The severe hypoglycaemia event incidences were 2.4% and 3.4%, and rates were 0.05 and 0.06 events/patient/year.

#### *Gastrointestinal adverse reactions*

Cumulative reporting of gastrointestinal events up to 104 weeks with dulaglutide 0.75mg and 1.5 mg, respectively, included nausea (12.9% and 21.2 %), diarrhoea (10.7% and 13.7 %) and vomiting (6.9% and 11.5 %). These were typically mild or moderate in severity and were reported to peak during the first 2 weeks of treatment and rapidly declined over the next 4 weeks, after which the rate remained relatively constant.

In clinical pharmacology studies conducted in patients with type 2 diabetes mellitus up to 6 weeks, the majority of gastrointestinal events were reported during the first 2-3 days after the initial dose and declined with subsequent doses.

#### *Acute pancreatitis*

The incidence of acute pancreatitis in Phase II and III clinical studies was 0.07% for dulaglutide compared to 0.14% for placebo and 0.19% for comparators with or without additional background antidiabetic therapy.

#### *Pancreatic enzymes*

Dulaglutide is associated with mean increases from baseline in pancreatic enzymes (lipase and/or pancreatic amylase) of 11 % to 21 % (see section 4.4). In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis.

#### *Heart rate increase*

Small mean increases in heart rate of 2 to 4 beats per minute (bpm) and a 1.3% and 1.4 % incidence of sinus tachycardia, with a concomitant increase from baseline  $\geq 15$  bpm, were observed with dulaglutide 0.75mg and 1.5 mg, respectively.

#### *First degree AV block/PR interval prolongation*

Small mean increases from baseline in PR interval of 2 to 3 msec and a 1.5% and 2.4 % incidence of first-degree AV block were observed with dulaglutide 0.75 mg and 1.5 mg, respectively.

#### *Immunogenicity*

In clinical studies, treatment with dulaglutide was associated with a 1.6 % incidence of treatment emergent dulaglutide anti-drug antibodies, indicating that the structural modifications in the GLP-1 and modified IgG4 parts of the dulaglutide molecule, together with high homology with native GLP-1 and native IgG4, minimise the risk of immune response against dulaglutide. Patients with dulaglutide anti-drug antibodies generally had low titres, and although the number of patients developing dulaglutide anti-drug antibodies was low, examination of the phase III data revealed no clear impact of dulaglutide anti-drug antibodies on changes in HbA1c.

#### *Hypersensitivity*

In the phase II and phase III clinical studies, systemic hypersensitivity events (e.g., urticaria, edema) were reported in 0.5 % of patients receiving dulaglutide. None of the patients with systemic hypersensitivity developed dulaglutide anti-drug antibodies.

### *Injection site reactions*

Injection site adverse events were reported in 1.9 % of patients receiving dulaglutide. Potentially immune-mediated injection site adverse events (e.g., rash, erythema) were reported in 0.7 % of patients and were usually mild.

### *Discontinuation due to an adverse event*

In studies of 26 weeks duration, the incidence of discontinuation due to adverse events was 2.6% (0.75 mg) and 6.1% (1.5 mg) for dulaglutide versus 3.7 % for placebo. Through the full study duration (up to 104 weeks), the incidence of discontinuation due to adverse events was 5.1% (0.75 mg) and 8.4 % (1.5 mg) for dulaglutide. The most frequent adverse reactions leading to discontinuation for 0.75 mg and 1.5 mg dulaglutide, respectively, were nausea (1.0%, 1.9 %), diarrhoea (0.5%, 0.6 %), and vomiting (0.4%, 0.6 %), and were generally reported within the first 4-6 weeks.

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## **4.9 Overdose**

Effects of overdose with dulaglutide in clinical studies have included gastrointestinal disorders and hypoglycaemia. In the event of overdose, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: {not yet assigned}, ATC code: {not yet assigned}.

#### Mechanism of action

Dulaglutide is a long-acting glucagon-like peptide 1 (GLP-1) receptor agonist. The molecule consists of 2 identical disulfide-linked chains, each containing a modified human GLP-1 analogue sequence covalently linked to a modified human immunoglobulin G4 (IgG4) heavy chain fragment (Fc) by a small peptide linker. The GLP-1 analog portion of dulaglutide is approximately 90 % homologous to native human GLP-1 (7-37). Native GLP-1 has a half-life of 1.5-2 minutes due to degradation by DPP-4 and renal clearance. In contrast to native GLP-1, dulaglutide is resistant to degradation by DPP-4, and has a large size that slows absorption and reduces renal clearance. These engineering features result in a soluble formulation and a prolonged half-life of 4.7 days, which makes it suitable for once-weekly subcutaneous administration. In addition, the dulaglutide molecule was engineered to prevent the Fc $\gamma$  receptor-dependent immune response and to reduce its immunogenic potential.

Dulaglutide exhibits several antihyperglycaemic actions of GLP-1. In the presence of elevated glucose concentrations, dulaglutide increases intracellular cyclic AMP (cAMP) in pancreatic beta cells leading to insulin release. Dulaglutide suppresses glucagon secretion which is known to be inappropriately elevated in patients with type 2 diabetes. Lower glucagon concentrations lead to decreased hepatic glucose output. Dulaglutide also slows gastric emptying.

#### Pharmacodynamic effects

Dulaglutide improves glycaemic control through the sustained effects of lowering fasting, pre-meal and postprandial glucose concentrations in patients with type 2 diabetes starting after the first dulaglutide administration and is sustained throughout the once weekly dosing interval.

A pharmacodynamic study with dulaglutide demonstrated, in patients with type 2 diabetes, a restoration of first phase insulin secretion to a level that exceeded levels observed in healthy subjects

on placebo, and improved second phase insulin secretion in response to an intravenous bolus of glucose. In the same study, a single 1.5 mg dose of dulaglutide appeared to increase maximal insulin secretion from the  $\beta$ -cells, and to enhance  $\beta$ -cell function in subjects with type 2 diabetes mellitus as compared with placebo.

Consistent with the pharmacokinetic profile, dulaglutide has a pharmacodynamic profile suitable for once weekly administration (see section 5.2).

### Clinical efficacy and safety

#### *Glycaemic control*

The safety and efficacy of dulaglutide was evaluated in six randomised, controlled, phase III trials involving 5,171 patients with type 2 diabetes. Of these, 958 were  $\geq 65$  years of which 93 were  $\geq 75$  years. These studies included 3,136 dulaglutide-treated patients, of whom 1,719 were treated with Trulicity 1.5 mg weekly and 1,417 were treated with Trulicity 0.75 mg weekly. In all studies, dulaglutide produced clinically significant improvements in glycaemic control as measured by glycosylated haemoglobin A1c (HbA1c).

#### *Monotherapy*

Dulaglutide was studied in a 52 week active controlled monotherapy study in comparison to metformin. Trulicity 1.5 mg and 0.75 mg were superior to metformin (1500-2000 mg/day) in the reduction in HbA1c and a significantly greater proportion of patients reached an HbA1c target of  $< 7.0\%$  and  $\leq 6.5\%$  with Trulicity 1.5 mg and Trulicity 0.75 mg compared to metformin at 26 weeks.

Table 2: Results of a 52 week active controlled monotherapy study with two doses of dulaglutide in comparison to metformin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	$<7.0\%$ (%)	$\leq 6.5\%$ (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.78 <sup>††</sup>	61.5 <sup>#</sup>	46.0 <sup>##</sup>	-1.61	-2.29
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.71 <sup>††</sup>	62.6 <sup>#</sup>	40.0 <sup>#</sup>	-1.46	-1.36 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.56	53.6	29.8	-1.34	-2.22
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.70 <sup>††</sup>	60.0 <sup>#</sup>	42.3 <sup>##</sup>	-1.56 <sup>#</sup>	-1.93
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.55 <sup>†</sup>	53.2	34.7	-1.00	-1.09 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.51	48.3	28.3	-1.15	-2.20

† multiplicity adjusted 1-sided p-value  $< 0.025$ , for noninferiority; †† multiplicity adjusted 1-sided p-value  $< 0.025$ , for superiority of dulaglutide to metformin, assessed for HbA1c only  
<sup>#</sup> p  $< 0.05$ , <sup>##</sup> p  $< 0.001$  dulaglutide treatment group compared to metformin

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and metformin were 0.62, 0.15, and 0.09 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed.

#### *Combination therapy with metformin*

The safety and efficacy of dulaglutide was investigated in a placebo and active controlled (sitagliptin 100 mg daily) study of 104 weeks duration, all in combination with metformin. Treatment with Trulicity 1.5 mg and 0.75 mg resulted in a superior reduction in HbA1c compared to sitagliptin at



52 weeks, accompanied by a significantly greater proportion of patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 %. These effects were sustained to the end of the study (104 weeks).

Table 3: Results of a 104 week placebo and active controlled study with two doses of dulaglutide in comparison to sitagliptin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0 % (%)	≤6.5 % (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.22 <sup>††##</sup>	60.9 <sup>**##</sup>	46.7 <sup>**##</sup>	-2.38 <sup>**##</sup>	-3.18 <sup>**##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-1.01 <sup>††##</sup>	55.2 <sup>**##</sup>	31.0 <sup>**##</sup>	-1.97 <sup>**##</sup>	-2.63 <sup>**##</sup>
Placebo (n= 177)	8.10	0.03	21.0	12.5	-0.49	-1.47
Sitagliptin 100 mg once daily (n=315)	8.09	-0.61	37.8	21.8	-0.97	-1.46
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.10 <sup>††</sup>	57.6 <sup>##</sup>	41.7 <sup>##</sup>	-2.38 <sup>##</sup>	-3.03 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.87 <sup>††</sup>	48.8 <sup>##</sup>	29.0 <sup>##</sup>	-1.63 <sup>##</sup>	-2.60 <sup>##</sup>
Sitagliptin 100 mg once daily (n=315)	8.09	-0.39	33.0	19.2	-0.90	-1.53
<b>104 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-0.99 <sup>††</sup>	54.3 <sup>##</sup>	39.1 <sup>##</sup>	-1.99 <sup>##</sup>	-2.88 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.71 <sup>††</sup>	44.8 <sup>##</sup>	24.2 <sup>##</sup>	-1.39 <sup>##</sup>	-2.39
Sitagliptin 100 mg once daily (n=315)	8.09	-0.32	31.1	14.1	-0.47	-1.75

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide compared to sitagliptin, assessed only for HbA1c at 52 and 104 weeks

## multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\*\* p < 0.001 dulaglutide treatment group compared to placebo

## p < 0.001 dulaglutide treatment group compared to sitagliptin

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and sitagliptin were 0.19, 0.18, and 0.17 episodes/patient/year, respectively. No cases of severe hypoglycaemia with dulaglutide were observed.

The safety and efficacy of dulaglutide was also investigated in an active controlled study (liraglutide 1.8 mg daily) of 26 weeks duration, both in combination with metformin. Treatment with Trulicity 1.5 mg resulted in similar lowering of HbA1c and patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 % compared to liraglutide.

Table 4: Results of a 26 week active controlled study of one dose of dulaglutide in comparison to liraglutide

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0 % (%)	≤6.5 % (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=299)	8.06	-1.42 <sup>‡</sup>	68.3	54.6	-1.93	-2.90 <sup>#</sup>
Liraglutide <sup>+</sup> 1.8 mg daily (n=300)	8.05	-1.36	67.9	50.9	-1.90	-3.61

<sup>‡</sup> 1-sided p-value  $p < 0.001$ , for noninferiority of dulaglutide compared to liraglutide, assessed only for HbA1c.

<sup>#</sup>  $p < 0.05$  dulaglutide treatment group compared to liraglutide.

<sup>+</sup> Patients randomised to liraglutide were initiated at a dose of 0.6 mg/day. After Week 1, patients were up-titrated to 1.2 mg/day and then at Week 2 to 1.8 mg/day.

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg was 0.12 episodes/patient/year and with liraglutide was 0.29 episodes/patient/year. No cases of severe hypoglycaemia were observed

#### Combination therapy with metformin and sulphonylurea

In an active controlled study of 78 weeks duration, dulaglutide was compared to insulin glargine, both on a background of metformin and a sulphonylurea. At 52 weeks, Trulicity 1.5 mg demonstrated superior lowering in HbA1c to insulin glargine which was maintained at 78 weeks; whereas lowering in HbA1c with Trulicity 0.75 mg was non-inferior to insulin glargine. With Trulicity 1.5 mg a significantly higher percentage of patients reached a target HbA1c of < 7.0 % or ≤ 6.5 % at 52 and 78 weeks compared to insulin glargine.

Table 5: Results of a 78 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-1.08 <sup>††</sup>	53.2 <sup>##</sup>	27.0 <sup>##</sup>	-1.50	-1.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.76 <sup>†</sup>	37.1	22.5 <sup>#</sup>	-0.87 <sup>##</sup>	-1.33 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.63	30.9	13.5	-1.76	1.44
<b>78 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-0.90 <sup>††</sup>	49.0 <sup>##</sup>	28.1 <sup>##</sup>	-1.10 <sup>#</sup>	-1.96 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.62 <sup>†</sup>	34.1	22.1	-0.58 <sup>##</sup>	-1.54 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.59	30.5	16.6	-1.58	1.28

<sup>†</sup> multiplicity adjusted 1-sided p-value < 0.025, for noninferiority; <sup>††</sup> multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

<sup>#</sup>  $p < 0.05$ , <sup>##</sup>  $p < 0.001$  dulaglutide treatment group compared to insulin glargine

<sup>+</sup> Insulin glargine doses were adjusted utilising an algorithm with a fasting plasma glucose target of < 5.6 mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 1.67, 1.67, and 3.02 episodes/patient/year, respectively. Two cases of severe hypoglycaemia were observed with Trulicity 1.5mg and two cases of severe hypoglycaemia were observed with insulin glargine.

*Combination therapy with metformin and pioglitazone*

In a placebo and active (exenatide twice daily) controlled study, both in combination with metformin and pioglitazone, Trulicity 1.5 mg and 0.75 mg demonstrated superiority for HbA1c reduction in comparison to placebo and exenatide, accompanied by a significantly a greater percentage of patients achieving HbA1c targets of < 7.0 % or ≤ 6.5 %

Table 6: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to exenatide

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0% (%)	≤6.5% (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.51 <sup>††, ††</sup>	78.2 <sup>**##</sup>	62.7 <sup>**##</sup>	-2.36 <sup>**##</sup>	-1.30 <sup>**</sup>
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.30 <sup>††/††</sup>	65.8 <sup>**/##</sup>	53.2 <sup>**/##</sup>	-1.90 <sup>**/##</sup>	0.20 <sup>*/##</sup>
Placebo (n=141)	8.06	-0.46	42.9	24.4	-0.26	1.24
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.99	52.3	38.0	-1.35	-1.07
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.36 <sup>††</sup>	70.8 <sup>##</sup>	57.2 <sup>##</sup>	-2.04 <sup>##</sup>	-1.10
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.07 <sup>††</sup>	59.1 <sup>#</sup>	48.3 <sup>##</sup>	-1.58 <sup>#</sup>	0.44 <sup>#</sup>
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.80	49.2	34.6	-1.03	-0.80

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to exenatide, assessed for HbA1c only

†† multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\* p < 0.05, \*\*p < 0.001 dulaglutide treatment group compared to placebo

# p < 0.05, ##p < 0.001 dulaglutide treatment group compared to exenatide

+ Exenatide dose was 5 mcg twice daily for first 4 weeks and 10 mcg twice daily thereafter

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and exenatide twice daily were 0.19, 0.14, and 0.75 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed for dulaglutide and two cases of severe hypoglycaemia were observed with exenatide twice daily.

*Combination therapy with prandial insulin with or without metformin*

In this study, patients on 1 or 2 insulin injections per day prior to study entry, discontinued their prestudy insulin regimen and were randomised to dulaglutide once weekly or insulin glargine once daily, both in combination with prandial insulin lispro three times daily, with or without metformin. At 26 weeks, both Trulicity 1.5 mg and 0.75mg were superior to insulin glargine in lowering of HbA1c and this effect was sustained at 52 weeks. . A greater percentage of patients achieved HbA1c targets of < 7.0 % or ≤ 6.5 % at 26 weeks and < 7.0 % at 52 weeks than with insulin glargine.

Table 7: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.64 <sup>††</sup>	67.6 <sup>#</sup>	48.0 <sup>#</sup>	-0.27 <sup>###</sup>	-0.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.59 <sup>††</sup>	69.0 <sup>#</sup>	43.0	0.22 <sup>###</sup>	0.18 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.41	56.8	37.5	-1.58	2.33
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.48 <sup>††</sup>	58.5 <sup>#</sup>	36.7	0.08 <sup>###</sup>	-0.35 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.42 <sup>††</sup>	56.3	34.7	0.41 <sup>###</sup>	0.86 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.23	49.3	30.4	-1.01	2.89

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

# p < 0.05, ### p < 0.001 dulaglutide treatment group compared to insulin glargine

+ Insulin glargine doses were adjusted utilizing an algorithm with a fasting plasma glucose target of < 5.6 mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 31.06, 35.66, and 40.95 episodes/patient/year, respectively. Ten patients reported severe hypoglycaemia with Trulicity 1.5 mg, seven with Trulicity 0.75 mg, and fifteen with insulin glargine.

#### *Fasting blood glucose*

Treatment with dulaglutide resulted in significant reductions from baseline in fasting blood glucose. The majority of the effect on fasting blood glucose concentrations occurred by 2 weeks. The improvement in fasting glucose was sustained through the longest study duration of 104 weeks.

#### *Postprandial glucose*

Treatment with dulaglutide resulted in significant reductions in mean post prandial glucose from baseline (changes from baseline to primary time point -1.95 mmol/L to -4.23 mmol/L).

#### *Beta-cell function*

Clinical studies with dulaglutide have indicated enhanced beta-cell function as measured by homeostasis model assessment (HOMA2-%B). The durability of effect on beta-cell function was maintained through the longest study duration of 104 weeks.

#### *Body weight*

Trulicity 1.5 mg was associated with sustained weight reduction over the duration of studies (from baseline to final time point -0.35 kg to -2.90 kg). Changes in body weight with Trulicity 0.75 mg ranged from 0.86 kg to -2.63 kg. Reduction in body weight was observed in patients treated with dulaglutide irrespective of nausea, though the reduction was numerically larger in the group with nausea.

#### *Patient reported outcomes*

Dulaglutide significantly improved total treatment satisfaction compared to exenatide twice daily. In addition, there was significantly lower perceived frequency of hyperglycaemia and hypoglycaemia compared to exenatide twice daily.

### *Blood pressure*

The effect of dulaglutide on blood pressure as assessed by Ambulatory Blood Pressure Monitoring was evaluated in a study of 755 patients with type 2 diabetes. Treatment with dulaglutide provided reductions in systolic blood pressure (SBP) (-2.8 mmHg difference compared to placebo) at 16 weeks. There was no difference in diastolic blood pressure (DBP). Similar results for SBP and DBP were demonstrated at the final 26 week time point of the study.

### *Cardiovascular Evaluation*

In a meta-analysis of phase II and III studies, a total of 51 patients (dulaglutide: 26 [N = 3,885]; all comparators: 25 [N = 2,125]) experienced at least one cardiovascular (CV) event (death due to CV causes, nonfatal MI, nonfatal stroke, or hospitalisation for unstable angina). The results showed that there was no increase in CV risk with dulaglutide compared with control therapies (HR: 0.57; CI: [0.30, 1.10]).

### Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies with dulaglutide in one or more subsets of the paediatric population in the treatment of type 2 diabetes mellitus (see section 4.2 for information on paediatric use).

## **5.2 Pharmacokinetic properties**

### Absorption

Following subcutaneous administration to patients with type 2 diabetes, dulaglutide reaches peak plasma concentrations in 48 hours. The mean peak ( $C_{max}$ ) and total (AUC) exposures were approximately 114 ng/ml and 14,000 ng·h/ml, respectively, after multiple subcutaneous 1.5 mg doses of dulaglutide in patients with type 2 diabetes. Steady-state plasma concentrations were achieved between 2 to 4 weeks of once-weekly administration of dulaglutide (1.5 mg). Exposures after subcutaneous administration of single dulaglutide (1.5 mg) doses in the abdomen, thigh, or upper arm were comparable. The mean absolute bioavailability of dulaglutide following single-dose subcutaneous administration of single 1.5 mg and 0.75 mg doses was 47 % and 65%, respectively.

### Distribution

The mean volume of distribution after subcutaneous administration of dulaglutide 0.75 mg and 1.5 mg at steady state in patients with type 2 diabetes mellitus were approximately 19.2 L and 17.4 L.

### Biotransformation

Dulaglutide is presumed to be degraded into its component amino acids by general protein catabolism pathways.

### Elimination

The mean apparent clearance of dulaglutide 0.75 mg and 1.5 mg at steady state was 0.073 L/h and 0.107 L/h with an elimination half-life of 4.5 and 4.7 days, respectively.

### Special populations

#### *Elderly patients (> 65 years old)*

Age had no clinically relevant effect on the pharmacokinetic and pharmacodynamic properties of dulaglutide.

#### *Gender and race*

Gender and race had no clinically meaningful effect on the pharmacokinetics of dulaglutide.

#### *Body weight or body mass index*

Pharmacokinetic analyses have demonstrated a statistically significant inverse relationship between body weight or body mass index (BMI) and dulaglutide exposure, although there was no clinically relevant impact of weight or BMI on glycaemic control.

#### *Patients with renal impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study and were generally similar between healthy subjects and patients with mild to severe renal impairment (CrCl < 30 ml/min), including end stage renal disease (requiring dialysis). In clinical studies, the dulaglutide safety profile in patients with moderate renal impairment was similar to the overall T2DM population. These studies did not include patients with severe renal impairment or end stage renal disease.

#### *Patients with hepatic impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study, where subjects with hepatic impairment had statistically significant decreases in dulaglutide exposure of up to 30 % to 33 % for mean C<sub>max</sub> and AUC, respectively, compared to healthy controls. There was a general increase in t<sub>max</sub> of dulaglutide with increased hepatic impairment. However, no trend in dulaglutide exposure was observed relative to the degree of hepatic impairment. These effects were not considered to be clinically relevant.

#### *Paediatric population*

Studies characterising the pharmacokinetics of dulaglutide in paediatric patients have not been performed.

### **5.3 Preclinical safety data**

Non-clinical data reveal no special hazards for humans based on conventional studies of safety pharmacology or repeat-dose toxicity.

In a 6-month carcinogenicity study in transgenic mice, there was no tumorigenic response. In a 2-year carcinogenicity study in rats, at  $\geq 7$  times the human clinical exposure following 1.5 mg dulaglutide per week, dulaglutide caused statistically significant, dose-related increases in the incidence of thyroid C-cell tumours (adenomas and carcinomas combined). The clinical relevance of these findings is currently unknown.

During the fertility studies, a reduction in the number of corpora lutea and prolonged oestrous cycle were observed at dose levels that were associated with decreased food intake and body weight gain in maternal animals; however, no effects on indices of fertility and conception or embryonic development were observed. In reproductive toxicology studies, skeletal effects and a reduction in foetal growth were observed in the rat and rabbit at exposures of dulaglutide 11- to 44-fold higher than those proposed clinically, but no foetal malformations were observed. Treatment of rats throughout pregnancy and lactation produced memory deficits in female offspring at exposures that were 16-fold higher than those proposed clinically.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Sodium citrate  
Citric acid, anhydrous  
Mannitol  
Polysorbate 80  
Water for injections

### **6.2 Incompatibilities**

In the absence of compatibility studies this medicinal product must not be mixed with other medicinal products.

### **6.3 Shelf life**

2 years

### **6.4 Special precautions for storage**

Store in a refrigerator (2°C – 8°C).

Do not freeze.

Store in original package in order to protect from light.

#### In use:

Trulicity may be stored unrefrigerated for up to 14 days at a temperature not above 30°C.

### **6.5 Nature and contents of container**

Glass syringe (type I) encased in a disposable pen.

Each pre-filled pen contains 0.5 ml of solution.

Packs of 2 and 4 pre-filled pens and multipack of 12 (3 packs of 4) pre-filled pens. Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

#### Instructions for use

The pre-filled pen is for single-use only.

The instructions for using the pen, included with the package leaflet, must be followed carefully.

Trulicity should not be used if particles appear or if the solution is cloudy and/or coloured.

Trulicity that has been frozen must not be used.

## **7. MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V., Grootslag 1-5, NL-3991 RA Houten, The Netherlands.

## **8. MARKETING AUTHORISATION NUMBER**

EU/1/14/956/006

EU/1/14/956/007

EU/1/14/956/008

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation:

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>

▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

## 1. NAME OF THE MEDICINAL PRODUCT

Trulicity 0.75 mg solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each pre-filled syringe contains 0.75 mg of dulaglutide\* in 0.5 ml solution.

\*Produced in CHO cells by recombinant DNA technology.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection (injection).  
Clear, colourless solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Trulicity is indicated in adults with type 2 diabetes mellitus to improve glycaemic control as:

#### *Monotherapy*

When diet and exercise alone do not provide adequate glycaemic control in patients for whom the use of metformin is considered inappropriate due to intolerance or contraindications.

#### *Add-on therapy*

In combination with other glucose-lowering medicinal products including insulin, when these, together with diet and exercise, do not provide adequate glycaemic control (see section 5.1 for data with respect to different combinations).

### 4.2 Posology and method of administration

#### Posology

#### *Monotherapy*

The recommended dose is 0.75 mg once weekly.

#### *Add-on therapy*

The recommended dose is 1.5 mg once weekly.

For potentially vulnerable populations, such as patients  $\geq 75$  years, 0.75 mg once weekly can be considered as a starting dose.

When Trulicity is added to existing metformin and/or pioglitazone therapy, the current dose of metformin and/or pioglitazone can be continued. When it is added to existing therapy of a sulphonylurea or prandial insulin, a reduction in the dose of sulphonylurea or insulin may be considered to reduce the risk of hypoglycaemia (see sections 4.4 and 4.8).



The use of Trulicity does not require blood glucose self-monitoring. Self-monitoring may be necessary to adjust the dose of sulphonylurea or prandial insulin.

#### *Elderly patients (> 65 years old)*

No dose adjustment is required based on age (see section 5.2). However, the therapeutic experience in patients  $\geq 75$  years is very limited (see section 5.1), and in these patients 0.75 mg once weekly can be considered as a starting dose.

#### *Patients with renal impairment*

No dosage adjustment is required in patients with mild or moderate renal impairment. There is very limited experience in patients with severe renal impairment (eGFR [by CKD-EPI]  $< 30$  ml/min/1.73 m<sup>2</sup>) or end stage renal disease, therefore Trulicity is not recommended in this population (see section 5.2).

#### *Patients with hepatic impairment*

No dosage adjustment is required in patients with hepatic impairment.

#### *Paediatric population*

The safety and efficacy of dulaglutide in children aged less than 18 years have not yet been established. No data are available.

### Method of administration

Trulicity is to be injected subcutaneously in the abdomen, thigh or upper arm. It should not be administered intravenously or intramuscularly.

The dose can be administered at any time of day, with or without meals.

If a dose is missed, it should be administered as soon as possible if there are at least 3 days (72 hours) until the next scheduled dose. If less than 3 days (72 hours) remain before the next scheduled dose, the missed dose should be skipped and the next dose should be administered on the regularly scheduled day. In each case, patients can then resume their regular once weekly dosing schedule.

The day of weekly administration can be changed if necessary, as long as the last dose was administered 3 or more days (72 hours) before.

### **4.3 Contraindications**

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

### **4.4 Special warnings and precautions for use**

Dulaglutide should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis.

Use of GLP-1 receptor agonists may be associated with gastrointestinal adverse reactions. This should be considered when treating patients with impaired renal function since these events, i.e. nausea, vomiting, and/or diarrhoea, may cause dehydration which could cause a deterioration of renal function. Dulaglutide has not been studied in patients with severe gastrointestinal disease, including severe gastroparesis, and is therefore not recommended in these patients.

#### Acute pancreatitis

Use of GLP-1 receptor agonists has been associated with a risk of developing acute pancreatitis. In clinical trials, acute pancreatitis has been reported in association with dulaglutide (see section 4.8).

Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, dulaglutide should be discontinued. If pancreatitis is confirmed, dulaglutide should not be

restarted. In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis (see section 4.8).

#### Hypoglycaemia

Patients receiving dulaglutide in combination with sulphonylurea or insulin may have an increased risk of hypoglycaemia. The risk of hypoglycaemia may be lowered by a reduction in the dose of sulphonylurea or insulin (see sections 4.2 and 4.8).

#### Populations not studied

There is limited experience in patients with congestive heart failure.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per 1.5 mg dose, i.e. essentially 'sodium-free'.

### **4.5 Interaction with other medicinal products and other forms of interaction**

Dulaglutide delays gastric emptying and has the potential to impact the rate of absorption of concomitantly administered oral medicinal products. Dulaglutide should be used with caution in patients receiving oral medicinal products that require rapid gastrointestinal absorption. For some prolonged release formulations, an increased release due to an extended gastric residence time may slightly increase drug exposure.

#### Paracetamol

Following a first dose of 1 and 3 mg dulaglutide, paracetamol  $C_{max}$  was reduced by 36 % and 50 %, respectively, and the median  $t_{max}$  occurred later (3 and 4 hours, respectively). After coadministration with up to 3 mg of dulaglutide at steady state, there were no statistically significant differences on  $AUC_{(0-12)}$ ,  $C_{max}$  or  $t_{max}$  of paracetamol. No dose adjustment of paracetamol is necessary when administered with dulaglutide.

#### Atorvastatin

Coadministration of dulaglutide with atorvastatin decreased  $C_{max}$  and  $AUC_{(0-\infty)}$  up to 70 % and 21 %, respectively, for atorvastatin and its major metabolite *o*-hydroxyatorvastatin. The mean  $t_{1/2}$  of atorvastatin and *o*-hydroxyatorvastatin were increased by 17 % and 41 %, respectively, following dulaglutide administration. These observations are not clinically relevant. No dose adjustment of atorvastatin is necessary when administered with dulaglutide.

#### Digoxin

After coadministration of steady state digoxin with 2 consecutive doses of dulaglutide, overall exposure ( $AUC_{\tau}$ ) and  $t_{max}$  of digoxin were unchanged; and  $C_{max}$  decreased by up to 22 %. This change is not expected to have clinical consequences. No dose adjustment is required for digoxin when administered with dulaglutide.

#### Anti-hypertensives

Coadministration of multiple dulaglutide doses with steady state lisinopril caused no clinically relevant changes in the AUC or  $C_{max}$  of lisinopril. Statistically significant delays in lisinopril  $t_{max}$  of approximately 1 hour were observed on Days 3 and 24 of the study. When a single dose of dulaglutide and metoprolol were coadministered, the AUC and  $C_{max}$  of metoprolol increased by 19 % and 32 %, respectively. While metoprolol  $t_{max}$  was delayed by 1 hour, this change was not statistically significant. These changes were not clinically relevant; therefore no dose adjustment of lisinopril or metoprolol is necessary when administered with dulaglutide.

#### Warfarin

Following dulaglutide coadministration, S- and R-warfarin exposure and R-warfarin  $C_{max}$  were unaffected, and S-warfarin  $C_{max}$  decreased by 22 %.  $AUC_{INR}$  increased by 2 %, which is unlikely to be clinically significant, and there was no effect on maximum international normalised ratio response ( $INR_{max}$ ). The time of international normalised ratio response ( $tINR_{max}$ ) was delayed by 6 hours,

consistent with delays in  $t_{\max}$  of approximately 4 and 6 hours for S- and R-warfarin, respectively. These changes are not clinically relevant. No dose adjustment for warfarin is necessary when given together with dulaglutide.

#### Oral contraceptives

Coadministration of dulaglutide with an oral contraceptive (norgestimate 0.18 mg/ethinyl estradiol 0.025 mg) did not affect the overall exposure to norelgestromin and ethinyl estradiol. Statistically significant reductions in  $C_{\max}$  of 26 % and 13 % and delays in  $t_{\max}$  of 2 and 0.30 hours were observed for norelgestromin and ethinyl estradiol, respectively. These observations are not clinically relevant. No dose adjustment for oral contraceptives is required when given together with dulaglutide.

#### Metformin

Following coadministration of multiple dose dulaglutide with steady state metformin (immediate release formula [IR]), metformin  $AUC_{\tau}$  increased up to 15 % and  $C_{\max}$  decreased up to 12 %, respectively, with no changes in  $t_{\max}$ . These changes are consistent with the gastric emptying delay of dulaglutide and within the pharmacokinetic variability of metformin and thus are not clinically relevant. No dose adjustment for metformin IR is recommended when given with dulaglutide.

#### Sitagliptin

Sitagliptin exposure was unaffected when coadministered with a single dose of dulaglutide. Following coadministration with 2 consecutive doses of dulaglutide, sitagliptin  $AUC_{(0-\tau)}$  and  $C_{\max}$  decreased by approximately 7.4 % and 23.1 %, respectively. Sitagliptin  $t_{\max}$  increased approximately 0.5 hours following coadministration with dulaglutide compared to sitagliptin alone.

Sitagliptin can produce up to 80 % inhibition of DPP-4 over a 24-hour period. Dulaglutide coadministration with sitagliptin increased dulaglutide exposure and  $C_{\max}$  by approximately 38 % and 27 %, respectively, and median  $t_{\max}$  increased approximately 24 hours. Therefore, dulaglutide does have a high degree of protection against DPP-4 inactivation (see section 5.1). The increased exposure may enhance the effects of dulaglutide on blood glucose levels.

### **4.6 Fertility, pregnancy and lactation**

#### Pregnancy

There are no or limited amount of data from the use of dulaglutide in pregnant women. Studies in animals have shown reproductive toxicity (see section 5.3). Therefore, the use of dulaglutide is not recommended during pregnancy.

#### Breast-feeding

It is unknown whether dulaglutide is excreted in human milk. A risk to newborns/infants cannot be excluded. Dulaglutide should not be used during breast-feeding.

#### Fertility

The effect of dulaglutide on fertility in humans is unknown. In the rat, there was no direct effect on mating or fertility following treatment with dulaglutide (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Trulicity has no or negligible influence on the ability to drive or use machines. When it is used in combination with a sulphonylurea or prandial insulin, patients should be advised to take precautions to avoid hypoglycaemia while driving and using machines (see section 4.4).

## 4.8 Undesirable effects

### Summary of safety profile

In the phase II and phase III studies conducted, 4,006 patients were exposed to dulaglutide alone or in combination with other glucose lowering medicinal products. The most frequently reported adverse reactions in clinical trials were gastrointestinal, including nausea, vomiting and diarrhoea. In general these reactions were mild or moderate in severity and transient in nature.

### Tabulated list of adverse reactions

The following adverse reactions have been identified based on evaluation of the full duration of the phase II and phase III clinical studies and are listed in Table 1 as MedDRA preferred term by system organ class and in order of decreasing incidence (very common:  $\geq 1/10$ ; common:  $\geq 1/100$  to  $< 1/10$ ; uncommon:  $\geq 1/1,000$  to  $< 1/100$ ; rare:  $\geq 1/10,000$  to  $< 1/1,000$ ; very rare:  $< 1/10,000$  and not known: cannot be estimated from available data). Within each incidence grouping, adverse reactions are presented in order of decreasing frequency.

Table 1: The frequency of adverse reactions of dulaglutide

<b>System Organ Class</b>	<b>Very common</b>	<b>Common</b>	<b>Uncommon</b>	<b>Rare</b>
<b>Metabolism and nutrition disorders</b>	Hypoglycaemia* (when used in combination with prandial insulin, metformin <sup>†</sup> or metformin plus glimepiride)	Hypoglycaemia* (when used as monotherapy or in combination with metformin plus pioglitazone)		
<b>Gastrointestinal disorders</b>	Nausea, diarrhoea, vomiting <sup>†</sup> , abdominal pain <sup>†</sup>	Decreased appetite, dyspepsia, constipation, flatulence, abdominal distention, gastroesophageal reflux disease, eructation		Acute pancreatitis
<b>General disorders and administration site conditions</b>		Fatigue	Injection site reactions	
<b>Investigations</b>		Sinus tachycardia, first degree atrioventricular block (AVB)		

\* Documented, symptomatic hypoglycaemia and blood glucose  $\leq$  to 3.9 mmol/L

<sup>†</sup> Dulaglutide 1.5 mg dose only. For dulaglutide 0.75 mg, adverse reaction met frequency for next lower incidence grouping.

### Description of selected adverse reactions

#### *Hypoglycaemia*

When dulaglutide 0.75 mg and 1.5 mg were used as monotherapy or in combination with metformin alone or metformin and pioglitazone, the incidences of documented symptomatic hypoglycaemia were 5.9% to 10.9% and the rates were 0.14 to 0.62 events/patient/year, and no episodes of severe hypoglycaemia were reported.

The incidences of documented symptomatic hypoglycaemia when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with a sulphonylurea (plus metformin) were 39.0% and 40.3% and the rates were 1.67 and 1.67 events/patient/year. The severe hypoglycaemia event incidences were 0% and 0.7%, and rates were 0.00 and 0.01 events/patient/year.

The incidences when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with prandial insulin were 85.3% and 80.0% and rates were 35.66 and 31.06 events/patient/year. The severe hypoglycaemia event incidences were 2.4% and 3.4%, and rates were 0.05 and 0.06 events/patient/year.

#### *Gastrointestinal adverse reactions*

Cumulative reporting of gastrointestinal events up to 104 weeks with dulaglutide 0.75mg and 1.5 mg, respectively, included nausea (12.9% and 21.2 %), diarrhoea (10.7% and 13.7 %) and vomiting (6.9% and 11.5 %). These were typically mild or moderate in severity and were reported to peak during the first 2 weeks of treatment and rapidly declined over the next 4 weeks, after which the rate remained relatively constant.

In clinical pharmacology studies conducted in patients with type 2 diabetes mellitus up to 6 weeks, the majority of gastrointestinal events were reported during the first 2-3 days after the initial dose and declined with subsequent doses.

#### *Acute pancreatitis*

The incidence of acute pancreatitis in Phase II and III clinical studies was 0.07% for dulaglutide compared to 0.14% for placebo and 0.19% for comparators with or without additional background antidiabetic therapy.

#### *Pancreatic enzymes*

Dulaglutide is associated with mean increases from baseline in pancreatic enzymes (lipase and/or pancreatic amylase) of 11 % to 21 % (see section 4.4). In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis.

#### *Heart rate increase*

Small mean increases in heart rate of 2 to 4 beats per minute (bpm) and a 1.3% and 1.4 % incidence of sinus tachycardia, with a concomitant increase from baseline  $\geq 15$  bpm, were observed with dulaglutide 0.75mg and 1.5 mg, respectively.

#### *First degree AV block/PR interval prolongation*

Small mean increases from baseline in PR interval of 2 to 3 msec and a 1.5% and 2.4 % incidence of first-degree AV block were observed with dulaglutide 0.75 mg and 1.5 mg, respectively.

#### *Immunogenicity*

In clinical studies, treatment with dulaglutide was associated with a 1.6 % incidence of treatment emergent dulaglutide anti-drug antibodies, indicating that the structural modifications in the GLP-1 and modified IgG4 parts of the dulaglutide molecule, together with high homology with native GLP-1 and native IgG4, minimise the risk of immune response against dulaglutide. Patients with dulaglutide anti-drug antibodies generally had low titres, and although the number of patients developing dulaglutide anti-drug antibodies was low, examination of the phase III data revealed no clear impact of dulaglutide anti-drug antibodies on changes in HbA1c.

#### *Hypersensitivity*

In the phase II and phase III clinical studies, systemic hypersensitivity events (e.g., urticaria, edema) were reported in 0.5 % of patients receiving dulaglutide. None of the patients with systemic hypersensitivity developed dulaglutide anti-drug antibodies.

### *Injection site reactions*

Injection site adverse events were reported in 1.9 % of patients receiving dulaglutide. Potentially immune-mediated injection site adverse events (e.g., rash, erythema) were reported in 0.7 % of patients and were usually mild.

### *Discontinuation due to an adverse event*

In studies of 26 weeks duration, the incidence of discontinuation due to adverse events was 2.6% (0.75 mg) and 6.1% (1.5 mg) for dulaglutide versus 3.7 % for placebo. Through the full study duration (up to 104 weeks), the incidence of discontinuation due to adverse events was 5.1% (0.75 mg) and 8.4 % (1.5 mg) for dulaglutide. The most frequent adverse reactions leading to discontinuation for 0.75 mg and 1.5 mg dulaglutide, respectively, were nausea (1.0%, 1.9 %), diarrhoea (0.5%, 0.6 %), and vomiting (0.4%, 0.6 %), and were generally reported within the first 4-6 weeks.

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## **4.9 Overdose**

Effects of overdose with dulaglutide in clinical studies have included gastrointestinal disorders and hypoglycaemia. In the event of overdose, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: {not yet assigned}, ATC code: {not yet assigned}.

#### Mechanism of action

Dulaglutide is a long-acting glucagon-like peptide 1 (GLP-1) receptor agonist. The molecule consists of 2 identical disulfide-linked chains, each containing a modified human GLP-1 analogue sequence covalently linked to a modified human immunoglobulin G4 (IgG4) heavy chain fragment (Fc) by a small peptide linker. The GLP-1 analog portion of dulaglutide is approximately 90 % homologous to native human GLP-1 (7-37). Native GLP-1 has a half-life of 1.5-2 minutes due to degradation by DPP-4 and renal clearance. In contrast to native GLP-1, dulaglutide is resistant to degradation by DPP-4, and has a large size that slows absorption and reduces renal clearance. These engineering features result in a soluble formulation and a prolonged half-life of 4.7 days, which makes it suitable for once-weekly subcutaneous administration. In addition, the dulaglutide molecule was engineered to prevent the Fcγ receptor-dependent immune response and to reduce its immunogenic potential.

Dulaglutide exhibits several antihyperglycaemic actions of GLP-1. In the presence of elevated glucose concentrations, dulaglutide increases intracellular cyclic AMP (cAMP) in pancreatic beta cells leading to insulin release. Dulaglutide suppresses glucagon secretion which is known to be inappropriately elevated in patients with type 2 diabetes. Lower glucagon concentrations lead to decreased hepatic glucose output. Dulaglutide also slows gastric emptying.

#### Pharmacodynamic effects

Dulaglutide improves glycaemic control through the sustained effects of lowering fasting, pre-meal and postprandial glucose concentrations in patients with type 2 diabetes starting after the first dulaglutide administration and is sustained throughout the once weekly dosing interval.

A pharmacodynamic study with dulaglutide demonstrated, in patients with type 2 diabetes, a restoration of first phase insulin secretion to a level that exceeded levels observed in healthy subjects

on placebo, and improved second phase insulin secretion in response to an intravenous bolus of glucose. In the same study, a single 1.5 mg dose of dulaglutide appeared to increase maximal insulin secretion from the  $\beta$ -cells, and to enhance  $\beta$ -cell function in subjects with type 2 diabetes mellitus as compared with placebo.

Consistent with the pharmacokinetic profile, dulaglutide has a pharmacodynamic profile suitable for once weekly administration (see section 5.2).

### Clinical efficacy and safety

#### *Glycaemic control*

The safety and efficacy of dulaglutide was evaluated in six randomised, controlled, phase III trials involving 5,171 patients with type 2 diabetes. Of these, 958 were  $\geq 65$  years of which 93 were  $\geq 75$  years. These studies included 3,136 dulaglutide-treated patients, of whom 1,719 were treated with Trulicity 1.5 mg weekly and 1,417 were treated with Trulicity 0.75 mg weekly. In all studies, dulaglutide produced clinically significant improvements in glycaemic control as measured by glycosylated haemoglobin A1c (HbA1c).

#### *Monotherapy*

Dulaglutide was studied in a 52 week active controlled monotherapy study in comparison to metformin. Trulicity 1.5 mg and 0.75 mg were superior to metformin (1500-2000 mg/day) in the reduction in HbA1c and a significantly greater proportion of patients reached an HbA1c target of  $< 7.0\%$  and  $\leq 6.5\%$  with Trulicity 1.5 mg and Trulicity 0.75 mg compared to metformin at 26 weeks.

Table 2: Results of a 52 week active controlled monotherapy study with two doses of dulaglutide in comparison to metformin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	$<7.0\%$ (%)	$\leq 6.5\%$ (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.78 <sup>††</sup>	61.5 <sup>#</sup>	46.0 <sup>##</sup>	-1.61	-2.29
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.71 <sup>††</sup>	62.6 <sup>#</sup>	40.0 <sup>#</sup>	-1.46	-1.36 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.56	53.6	29.8	-1.34	-2.22
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.70 <sup>††</sup>	60.0 <sup>#</sup>	42.3 <sup>##</sup>	-1.56 <sup>#</sup>	-1.93
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.55 <sup>†</sup>	53.2	34.7	-1.00	-1.09 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.51	48.3	28.3	-1.15	-2.20

† multiplicity adjusted 1-sided p-value  $< 0.025$ , for noninferiority; †† multiplicity adjusted 1-sided p-value  $< 0.025$ , for superiority of dulaglutide to metformin, assessed for HbA1c only  
<sup>#</sup> p  $< 0.05$ , <sup>##</sup> p  $< 0.001$  dulaglutide treatment group compared to metformin

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and metformin were 0.62, 0.15, and 0.09 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed.

#### *Combination therapy with metformin*

The safety and efficacy of dulaglutide was investigated in a placebo and active controlled (sitagliptin 100 mg daily) study of 104 weeks duration, all in combination with metformin. Treatment with Trulicity 1.5 mg and 0.75 mg resulted in a superior reduction in HbA1c compared to sitagliptin at

52 weeks, accompanied by a significantly greater proportion of patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 %. These effects were sustained to the end of the study (104 weeks).

Table 3: Results of a 104 week placebo and active controlled study with two doses of dulaglutide in comparison to sitagliptin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0 % (%)	≤6.5 % (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.22 <sup>††##</sup>	60.9 <sup>**##</sup>	46.7 <sup>**##</sup>	-2.38 <sup>**##</sup>	-3.18 <sup>**##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-1.01 <sup>††##</sup>	55.2 <sup>**##</sup>	31.0 <sup>**##</sup>	-1.97 <sup>**##</sup>	-2.63 <sup>**##</sup>
Placebo (n= 177)	8.10	0.03	21.0	12.5	-0.49	-1.47
Sitagliptin 100 mg once daily (n=315)	8.09	-0.61	37.8	21.8	-0.97	-1.46
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.10 <sup>††</sup>	57.6 <sup>##</sup>	41.7 <sup>##</sup>	-2.38 <sup>##</sup>	-3.03 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.87 <sup>††</sup>	48.8 <sup>##</sup>	29.0 <sup>##</sup>	-1.63 <sup>##</sup>	-2.60 <sup>##</sup>
Sitagliptin 100 mg once daily (n=315)	8.09	-0.39	33.0	19.2	-0.90	-1.53
<b>104 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-0.99 <sup>††</sup>	54.3 <sup>##</sup>	39.1 <sup>##</sup>	-1.99 <sup>##</sup>	-2.88 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.71 <sup>††</sup>	44.8 <sup>##</sup>	24.2 <sup>##</sup>	-1.39 <sup>##</sup>	-2.39
Sitagliptin 100 mg once daily (n=315)	8.09	-0.32	31.1	14.1	-0.47	-1.75

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide compared to sitagliptin, assessed only for HbA1c at 52 and 104 weeks

## multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\*\* p < 0.001 dulaglutide treatment group compared to placebo

## p < 0.001 dulaglutide treatment group compared to sitagliptin

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and sitagliptin were 0.19, 0.18, and 0.17 episodes/patient/year, respectively. No cases of severe hypoglycaemia with dulaglutide were observed.

The safety and efficacy of dulaglutide was also investigated in an active controlled study (liraglutide 1.8 mg daily) of 26 weeks duration, both in combination with metformin. Treatment with Trulicity 1.5 mg resulted in similar lowering of HbA1c and patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 % compared to liraglutide.



Table 4: Results of a 26 week active controlled study of one dose of dulaglutide in comparison to liraglutide

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0 % (%)	≤6.5 % (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=299)	8.06	-1.42 <sup>‡</sup>	68.3	54.6	-1.93	-2.90 <sup>#</sup>
Liraglutide <sup>+</sup> 1.8 mg daily (n=300)	8.05	-1.36	67.9	50.9	-1.90	-3.61

<sup>‡</sup> 1-sided p-value  $p < 0.001$ , for noninferiority of dulaglutide compared to liraglutide, assessed only for HbA1c.

<sup>#</sup>  $p < 0.05$  dulaglutide treatment group compared to liraglutide.

<sup>+</sup> Patients randomised to liraglutide were initiated at a dose of 0.6 mg/day. After Week 1, patients were up-titrated to 1.2 mg/day and then at Week 2 to 1.8 mg/day.

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg was 0.12 episodes/patient/year and with liraglutide was 0.29 episodes/patient/year. No cases of severe hypoglycaemia were observed

#### Combination therapy with metformin and sulphonylurea

In an active controlled study of 78 weeks duration, dulaglutide was compared to insulin glargine, both on a background of metformin and a sulphonylurea. At 52 weeks, Trulicity 1.5 mg demonstrated superior lowering in HbA1c to insulin glargine which was maintained at 78 weeks; whereas lowering in HbA1c with Trulicity 0.75 mg was non-inferior to insulin glargine. With Trulicity 1.5 mg a significantly higher percentage of patients reached a target HbA1c of  $< 7.0\%$  or  $\leq 6.5\%$  at 52 and 78 weeks compared to insulin glargine.

Table 5: Results of a 78 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-1.08 <sup>††</sup>	53.2 <sup>##</sup>	27.0 <sup>##</sup>	-1.50	-1.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.76 <sup>†</sup>	37.1	22.5 <sup>#</sup>	-0.87 <sup>##</sup>	-1.33 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.63	30.9	13.5	-1.76	1.44
<b>78 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-0.90 <sup>††</sup>	49.0 <sup>##</sup>	28.1 <sup>##</sup>	-1.10 <sup>#</sup>	-1.96 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.62 <sup>†</sup>	34.1	22.1	-0.58 <sup>##</sup>	-1.54 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.59	30.5	16.6	-1.58	1.28

<sup>†</sup> multiplicity adjusted 1-sided p-value  $< 0.025$ , for noninferiority; <sup>††</sup> multiplicity adjusted 1-sided p-value  $< 0.025$ , for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

<sup>#</sup>  $p < 0.05$ , <sup>##</sup>  $p < 0.001$  dulaglutide treatment group compared to insulin glargine

<sup>+</sup> Insulin glargine doses were adjusted utilising an algorithm with a fasting plasma glucose target of  $< 5.6$  mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 1.67, 1.67, and 3.02 episodes/patient/year, respectively. Two cases of severe hypoglycaemia were observed with Trulicity 1.5mg and two cases of severe hypoglycaemia were observed with insulin glargine.

*Combination therapy with metformin and pioglitazone*

In a placebo and active (exenatide twice daily) controlled study, both in combination with metformin and pioglitazone, Trulicity 1.5 mg and 0.75 mg demonstrated superiority for HbA1c reduction in comparison to placebo and exenatide, accompanied by a significantly a greater percentage of patients achieving HbA1c targets of < 7.0 % or ≤ 6.5 %

Table 6: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to exenatide

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0% (%)	≤6.5% (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.51 <sup>‡‡, ††</sup>	78.2 <sup>**##</sup>	62.7 <sup>**##</sup>	-2.36 <sup>**##</sup>	-1.30 <sup>**</sup>
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.30 <sup>‡‡/††</sup>	65.8 <sup>**/##</sup>	53.2 <sup>**/##</sup>	-1.90 <sup>**/##</sup>	0.20 <sup>*/##</sup>
Placebo (n=141)	8.06	-0.46	42.9	24.4	-0.26	1.24
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.99	52.3	38.0	-1.35	-1.07
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.36 <sup>††</sup>	70.8 <sup>##</sup>	57.2 <sup>##</sup>	-2.04 <sup>##</sup>	-1.10
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.07 <sup>††</sup>	59.1 <sup>#</sup>	48.3 <sup>##</sup>	-1.58 <sup>#</sup>	0.44 <sup>#</sup>
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.80	49.2	34.6	-1.03	-0.80

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to exenatide, assessed for HbA1c only

‡‡ multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\* p < 0.05, \*\*p < 0.001 dulaglutide treatment group compared to placebo

# p < 0.05, ##p < 0.001 dulaglutide treatment group compared to exenatide

+ Exenatide dose was 5 mcg twice daily for first 4 weeks and 10 mcg twice daily thereafter

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and exenatide twice daily were 0.19, 0.14, and 0.75 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed for dulaglutide and two cases of severe hypoglycaemia were observed with exenatide twice daily.

*Combination therapy with prandial insulin with or without metformin*

In this study, patients on 1 or 2 insulin injections per day prior to study entry, discontinued their prestudy insulin regimen and were randomised to dulaglutide once weekly or insulin glargine once daily, both in combination with prandial insulin lispro three times daily, with or without metformin. At 26 weeks, both Trulicity 1.5 mg and 0.75mg were superior to insulin glargine in lowering of HbA1c and this effect was sustained at 52 weeks. . A greater percentage of patients achieved HbA1c targets of < 7.0 % or ≤ 6.5 % at 26 weeks and < 7.0 % at 52 weeks than with insulin glargine.

Table 7: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.64 <sup>††</sup>	67.6 <sup>#</sup>	48.0 <sup>#</sup>	-0.27 <sup>###</sup>	-0.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.59 <sup>††</sup>	69.0 <sup>#</sup>	43.0	0.22 <sup>###</sup>	0.18 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.41	56.8	37.5	-1.58	2.33
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.48 <sup>††</sup>	58.5 <sup>#</sup>	36.7	0.08 <sup>###</sup>	-0.35 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.42 <sup>††</sup>	56.3	34.7	0.41 <sup>###</sup>	0.86 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.23	49.3	30.4	-1.01	2.89

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

# p < 0.05, ### p < 0.001 dulaglutide treatment group compared to insulin glargine

+ Insulin glargine doses were adjusted utilizing an algorithm with a fasting plasma glucose target of < 5.6 mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 31.06, 35.66, and 40.95 episodes/patient/year, respectively. Ten patients reported severe hypoglycaemia with Trulicity 1.5 mg, seven with Trulicity 0.75 mg, and fifteen with insulin glargine.

#### *Fasting blood glucose*

Treatment with dulaglutide resulted in significant reductions from baseline in fasting blood glucose. The majority of the effect on fasting blood glucose concentrations occurred by 2 weeks. The improvement in fasting glucose was sustained through the longest study duration of 104 weeks.

#### *Postprandial glucose*

Treatment with dulaglutide resulted in significant reductions in mean post prandial glucose from baseline (changes from baseline to primary time point -1.95 mmol/L to -4.23 mmol/L).

#### *Beta-cell function*

Clinical studies with dulaglutide have indicated enhanced beta-cell function as measured by homeostasis model assessment (HOMA2-%B). The durability of effect on beta-cell function was maintained through the longest study duration of 104 weeks.

#### *Body weight*

Trulicity 1.5 mg was associated with sustained weight reduction over the duration of studies (from baseline to final time point -0.35 kg to -2.90 kg). Changes in body weight with Trulicity 0.75 mg ranged from 0.86 kg to -2.63 kg. Reduction in body weight was observed in patients treated with dulaglutide irrespective of nausea, though the reduction was numerically larger in the group with nausea.

#### *Patient reported outcomes*

Dulaglutide significantly improved total treatment satisfaction compared to exenatide twice daily. In addition, there was significantly lower perceived frequency of hyperglycaemia and hypoglycaemia compared to exenatide twice daily.

### *Blood pressure*

The effect of dulaglutide on blood pressure as assessed by Ambulatory Blood Pressure Monitoring was evaluated in a study of 755 patients with type 2 diabetes. Treatment with dulaglutide provided reductions in systolic blood pressure (SBP) (-2.8 mmHg difference compared to placebo) at 16 weeks. There was no difference in diastolic blood pressure (DBP). Similar results for SBP and DBP were demonstrated at the final 26 week time point of the study.

### *Cardiovascular Evaluation*

In a meta-analysis of phase II and III studies, a total of 51 patients (dulaglutide: 26 [N = 3,885]; all comparators: 25 [N = 2,125]) experienced at least one cardiovascular (CV) event (death due to CV causes, nonfatal MI, nonfatal stroke, or hospitalisation for unstable angina). The results showed that there was no increase in CV risk with dulaglutide compared with control therapies (HR: 0.57; CI: [0.30, 1.10]).

### Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies with dulaglutide in one or more subsets of the paediatric population in the treatment of type 2 diabetes mellitus (see section 4.2 for information on paediatric use).

## **5.2 Pharmacokinetic properties**

### Absorption

Following subcutaneous administration to patients with type 2 diabetes, dulaglutide reaches peak plasma concentrations in 48 hours. The mean peak ( $C_{max}$ ) and total (AUC) exposures were approximately 114 ng/ml and 14,000 ng·h/ml, respectively, after multiple subcutaneous 1.5 mg doses of dulaglutide in patients with type 2 diabetes. Steady-state plasma concentrations were achieved between 2 to 4 weeks of once-weekly administration of dulaglutide (1.5 mg). Exposures after subcutaneous administration of single dulaglutide (1.5 mg) doses in the abdomen, thigh, or upper arm were comparable. The mean absolute bioavailability of dulaglutide following single-dose subcutaneous administration of single 1.5 mg and 0.75 mg doses was 47 % and 65%, respectively.

### Distribution

The mean volume of distribution after subcutaneous administration of dulaglutide 0.75 mg and 1.5 mg at steady state in patients with type 2 diabetes mellitus were approximately 19.2 L and 17.4 L.

### Biotransformation

Dulaglutide is presumed to be degraded into its component amino acids by general protein catabolism pathways.

### Elimination

The mean apparent clearance of dulaglutide 0.75 mg and 1.5 mg at steady state was 0.073 L/h and 0.107 L/h with an elimination half-life of 4.5 and 4.7 days, respectively.

### Special populations

#### *Elderly patients (> 65 years old)*

Age had no clinically relevant effect on the pharmacokinetic and pharmacodynamic properties of dulaglutide.

#### *Gender and race*

Gender and race had no clinically meaningful effect on the pharmacokinetics of dulaglutide.

#### *Body weight or body mass index*

Pharmacokinetic analyses have demonstrated a statistically significant inverse relationship between body weight or body mass index (BMI) and dulaglutide exposure, although there was no clinically relevant impact of weight or BMI on glycaemic control.

#### *Patients with renal impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study and were generally similar between healthy subjects and patients with mild to severe renal impairment (CrCl < 30 ml/min), including end stage renal disease (requiring dialysis). In clinical studies, the dulaglutide safety profile in patients with moderate renal impairment was similar to the overall T2DM population. These studies did not include patients with severe renal impairment or end stage renal disease.

#### *Patients with hepatic impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study, where subjects with hepatic impairment had statistically significant decreases in dulaglutide exposure of up to 30 % to 33 % for mean C<sub>max</sub> and AUC, respectively, compared to healthy controls. There was a general increase in t<sub>max</sub> of dulaglutide with increased hepatic impairment. However, no trend in dulaglutide exposure was observed relative to the degree of hepatic impairment. These effects were not considered to be clinically relevant.

#### *Paediatric population*

Studies characterising the pharmacokinetics of dulaglutide in paediatric patients have not been performed.

### **5.3 Preclinical safety data**

Non-clinical data reveal no special hazards for humans based on conventional studies of safety pharmacology or repeat-dose toxicity.

In a 6-month carcinogenicity study in transgenic mice, there was no tumorigenic response. In a 2-year carcinogenicity study in rats, at  $\geq 7$  times the human clinical exposure following 1.5 mg dulaglutide per week, dulaglutide caused statistically significant, dose-related increases in the incidence of thyroid C-cell tumours (adenomas and carcinomas combined). The clinical relevance of these findings is currently unknown.

During the fertility studies, a reduction in the number of corpora lutea and prolonged oestrous cycle were observed at dose levels that were associated with decreased food intake and body weight gain in maternal animals; however, no effects on indices of fertility and conception or embryonic development were observed. In reproductive toxicology studies, skeletal effects and a reduction in foetal growth were observed in the rat and rabbit at exposures of dulaglutide 11- to 44-fold higher than those proposed clinically, but no foetal malformations were observed. Treatment of rats throughout pregnancy and lactation produced memory deficits in female offspring at exposures that were 16-fold higher than those proposed clinically.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Sodium citrate  
Citric acid, anhydrous  
Mannitol  
Polysorbate 80  
Water for injections

### **6.2 Incompatibilities**

In the absence of compatibility studies this medicinal product must not be mixed with other medicinal products.

### **6.3 Shelf life**

2 years

### **6.4 Special precautions for storage**

Store in a refrigerator (2°C – 8°C).

Do not freeze.

Store in original package in order to protect from light.

#### In use:

Trulicity may be stored unrefrigerated for up to 14 days at a temperature not above 30°C.

### **6.5 Nature and contents of container**

Glass syringe (type I).

Each pre-filled syringe contains 0.5 ml of solution.

Packs of 4 pre-filled syringes and multipack of 12 (3 packs of 4) pre-filled syringes. Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

#### Instructions for use

The pre-filled syringe is for single-use only.

The instructions for using the syringe, included with the package leaflet, must be followed carefully.

Trulicity should not be used if particles appear or if the solution is cloudy and/or coloured.

Trulicity that has been frozen must not be used.

## **7. MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V., Grootslag 1-5, NL-3991 RA Houten, The Netherlands.

## **8. MARKETING AUTHORISATION NUMBER**

EU/1/14/956/004

EU/1/14/956/005

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation:

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>

▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

## 1. NAME OF THE MEDICINAL PRODUCT

Trulicity 1.5 mg solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each pre-filled syringe contains 1.5 mg of dulaglutide\* in 0.5 ml solution.

\*Produced in CHO cells by recombinant DNA technology.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection (injection).  
Clear, colourless solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Trulicity is indicated in adults with type 2 diabetes mellitus to improve glycaemic control as:

#### *Monotherapy*

When diet and exercise alone do not provide adequate glycaemic control in patients for whom the use of metformin is considered inappropriate due to intolerance or contraindications.

#### *Add-on therapy*

In combination with other glucose-lowering medicinal products including insulin, when these, together with diet and exercise, do not provide adequate glycaemic control (see section 5.1 for data with respect to different combinations).

### 4.2 Posology and method of administration

#### Posology

#### *Monotherapy*

The recommended dose is 0.75 mg once weekly.

#### *Add-on therapy*

The recommended dose is 1.5 mg once weekly.

For potentially vulnerable populations, such as patients  $\geq 75$  years, 0.75 mg once weekly can be considered as a starting dose.

When Trulicity is added to existing metformin and/or pioglitazone therapy, the current dose of metformin and/or pioglitazone can be continued. When it is added to existing therapy of a sulphonylurea or prandial insulin, a reduction in the dose of sulphonylurea or insulin may be considered to reduce the risk of hypoglycaemia (see sections 4.4 and 4.8).

The use of Trulicity does not require blood glucose self-monitoring. Self-monitoring may be necessary to adjust the dose of sulphonylurea or prandial insulin.

#### *Elderly patients (> 65 years old)*

No dose adjustment is required based on age (see section 5.2). However, the therapeutic experience in patients  $\geq 75$  years is very limited (see section 5.1), and in these patients 0.75 mg once weekly can be considered as a starting dose.

#### *Patients with renal impairment*

No dosage adjustment is required in patients with mild or moderate renal impairment. There is very limited experience in patients with severe renal impairment (eGFR [by CKD-EPI]  $< 30$  ml/min/1.73 m<sup>2</sup>) or end stage renal disease, therefore Trulicity is not recommended in this population (see section 5.2).

#### *Patients with hepatic impairment*

No dosage adjustment is required in patients with hepatic impairment.

#### *Paediatric population*

The safety and efficacy of dulaglutide in children aged less than 18 years have not yet been established. No data are available.

### Method of administration

Trulicity is to be injected subcutaneously in the abdomen, thigh or upper arm. It should not be administered intravenously or intramuscularly.

The dose can be administered at any time of day, with or without meals.

If a dose is missed, it should be administered as soon as possible if there are at least 3 days (72 hours) until the next scheduled dose. If less than 3 days (72 hours) remain before the next scheduled dose, the missed dose should be skipped and the next dose should be administered on the regularly scheduled day. In each case, patients can then resume their regular once weekly dosing schedule.

The day of weekly administration can be changed if necessary, as long as the last dose was administered 3 or more days (72 hours) before.

### **4.3 Contraindications**

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

### **4.4 Special warnings and precautions for use**

Dulaglutide should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis.

Use of GLP-1 receptor agonists may be associated with gastrointestinal adverse reactions. This should be considered when treating patients with impaired renal function since these events, i.e. nausea, vomiting, and/or diarrhoea, may cause dehydration which could cause a deterioration of renal function. Dulaglutide has not been studied in patients with severe gastrointestinal disease, including severe gastroparesis, and is therefore not recommended in these patients.

#### Acute pancreatitis

Use of GLP-1 receptor agonists has been associated with a risk of developing acute pancreatitis. In clinical trials, acute pancreatitis has been reported in association with dulaglutide (see section 4.8).

Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, dulaglutide should be discontinued. If pancreatitis is confirmed, dulaglutide should not be



restarted. In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis (see section 4.8).

#### Hypoglycaemia

Patients receiving dulaglutide in combination with sulphonylurea or insulin may have an increased risk of hypoglycaemia. The risk of hypoglycaemia may be lowered by a reduction in the dose of sulphonylurea or insulin (see sections 4.2 and 4.8).

#### Populations not studied

There is limited experience in patients with congestive heart failure.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per 1.5 mg dose, i.e. essentially 'sodium-free'.

### **4.5 Interaction with other medicinal products and other forms of interaction**

Dulaglutide delays gastric emptying and has the potential to impact the rate of absorption of concomitantly administered oral medicinal products. Dulaglutide should be used with caution in patients receiving oral medicinal products that require rapid gastrointestinal absorption. For some prolonged release formulations, an increased release due to an extended gastric residence time may slightly increase drug exposure.

#### Paracetamol

Following a first dose of 1 and 3 mg dulaglutide, paracetamol  $C_{max}$  was reduced by 36 % and 50 %, respectively, and the median  $t_{max}$  occurred later (3 and 4 hours, respectively). After coadministration with up to 3 mg of dulaglutide at steady state, there were no statistically significant differences on  $AUC_{(0-12)}$ ,  $C_{max}$  or  $t_{max}$  of paracetamol. No dose adjustment of paracetamol is necessary when administered with dulaglutide.

#### Atorvastatin

Coadministration of dulaglutide with atorvastatin decreased  $C_{max}$  and  $AUC_{(0-\infty)}$  up to 70 % and 21 %, respectively, for atorvastatin and its major metabolite *o*-hydroxyatorvastatin. The mean  $t_{1/2}$  of atorvastatin and *o*-hydroxyatorvastatin were increased by 17 % and 41 %, respectively, following dulaglutide administration. These observations are not clinically relevant. No dose adjustment of atorvastatin is necessary when administered with dulaglutide.

#### Digoxin

After coadministration of steady state digoxin with 2 consecutive doses of dulaglutide, overall exposure ( $AUC_{\tau}$ ) and  $t_{max}$  of digoxin were unchanged; and  $C_{max}$  decreased by up to 22 %. This change is not expected to have clinical consequences. No dose adjustment is required for digoxin when administered with dulaglutide.

#### Anti-hypertensives

Coadministration of multiple dulaglutide doses with steady state lisinopril caused no clinically relevant changes in the AUC or  $C_{max}$  of lisinopril. Statistically significant delays in lisinopril  $t_{max}$  of approximately 1 hour were observed on Days 3 and 24 of the study. When a single dose of dulaglutide and metoprolol were coadministered, the AUC and  $C_{max}$  of metoprolol increased by 19 % and 32 %, respectively. While metoprolol  $t_{max}$  was delayed by 1 hour, this change was not statistically significant. These changes were not clinically relevant; therefore no dose adjustment of lisinopril or metoprolol is necessary when administered with dulaglutide.

#### Warfarin

Following dulaglutide coadministration, S- and R-warfarin exposure and R-warfarin  $C_{max}$  were unaffected, and S-warfarin  $C_{max}$  decreased by 22 %.  $AUC_{INR}$  increased by 2 %, which is unlikely to be clinically significant, and there was no effect on maximum international normalised ratio response ( $INR_{max}$ ). The time of international normalised ratio response ( $tINR_{max}$ ) was delayed by 6 hours,

consistent with delays in  $t_{\max}$  of approximately 4 and 6 hours for S- and R-warfarin, respectively. These changes are not clinically relevant. No dose adjustment for warfarin is necessary when given together with dulaglutide.

#### Oral contraceptives

Coadministration of dulaglutide with an oral contraceptive (norgestimate 0.18 mg/ethinyl estradiol 0.025 mg) did not affect the overall exposure to norelgestromin and ethinyl estradiol. Statistically significant reductions in  $C_{\max}$  of 26 % and 13 % and delays in  $t_{\max}$  of 2 and 0.30 hours were observed for norelgestromin and ethinyl estradiol, respectively. These observations are not clinically relevant. No dose adjustment for oral contraceptives is required when given together with dulaglutide.

#### Metformin

Following coadministration of multiple dose dulaglutide with steady state metformin (immediate release formula [IR]), metformin  $AUC_{\tau}$  increased up to 15 % and  $C_{\max}$  decreased up to 12 %, respectively, with no changes in  $t_{\max}$ . These changes are consistent with the gastric emptying delay of dulaglutide and within the pharmacokinetic variability of metformin and thus are not clinically relevant. No dose adjustment for metformin IR is recommended when given with dulaglutide.

#### Sitagliptin

Sitagliptin exposure was unaffected when coadministered with a single dose of dulaglutide. Following coadministration with 2 consecutive doses of dulaglutide, sitagliptin  $AUC_{(0-\tau)}$  and  $C_{\max}$  decreased by approximately 7.4 % and 23.1 %, respectively. Sitagliptin  $t_{\max}$  increased approximately 0.5 hours following coadministration with dulaglutide compared to sitagliptin alone.

Sitagliptin can produce up to 80 % inhibition of DPP-4 over a 24-hour period. Dulaglutide coadministration with sitagliptin increased dulaglutide exposure and  $C_{\max}$  by approximately 38 % and 27 %, respectively, and median  $t_{\max}$  increased approximately 24 hours. Therefore, dulaglutide does have a high degree of protection against DPP-4 inactivation (see section 5.1). The increased exposure may enhance the effects of dulaglutide on blood glucose levels.

### **4.6 Fertility, pregnancy and lactation**

#### Pregnancy

There are no or limited amount of data from the use of dulaglutide in pregnant women. Studies in animals have shown reproductive toxicity (see section 5.3). Therefore, the use of dulaglutide is not recommended during pregnancy.

#### Breast-feeding

It is unknown whether dulaglutide is excreted in human milk. A risk to newborns/infants cannot be excluded. Dulaglutide should not be used during breast-feeding.

#### Fertility

The effect of dulaglutide on fertility in humans is unknown. In the rat, there was no direct effect on mating or fertility following treatment with dulaglutide (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Trulicity has no or negligible influence on the ability to drive or use machines. When it is used in combination with a sulphonylurea or prandial insulin, patients should be advised to take precautions to avoid hypoglycaemia while driving and using machines (see section 4.4).

## 4.8 Undesirable effects

### Summary of safety profile

In the phase II and phase III studies conducted, 4,006 patients were exposed to dulaglutide alone or in combination with other glucose lowering medicinal products. The most frequently reported adverse reactions in clinical trials were gastrointestinal, including nausea, vomiting and diarrhoea. In general these reactions were mild or moderate in severity and transient in nature.

### Tabulated list of adverse reactions

The following adverse reactions have been identified based on evaluation of the full duration of the phase II and phase III clinical studies and are listed in Table 1 as MedDRA preferred term by system organ class and in order of decreasing incidence (very common:  $\geq 1/10$ ; common:  $\geq 1/100$  to  $< 1/10$ ; uncommon:  $\geq 1/1,000$  to  $< 1/100$ ; rare:  $\geq 1/10,000$  to  $< 1/1,000$ ; very rare:  $< 1/10,000$  and not known: cannot be estimated from available data). Within each incidence grouping, adverse reactions are presented in order of decreasing frequency.

Table 1: The frequency of adverse reactions of dulaglutide

<b>System Organ Class</b>	<b>Very common</b>	<b>Common</b>	<b>Uncommon</b>	<b>Rare</b>
<b>Metabolism and nutrition disorders</b>	Hypoglycaemia* (when used in combination with prandial insulin, metformin <sup>†</sup> or metformin plus glimepiride)	Hypoglycaemia* (when used as monotherapy or in combination with metformin plus pioglitazone)		
<b>Gastrointestinal disorders</b>	Nausea, diarrhoea, vomiting <sup>†</sup> , abdominal pain <sup>†</sup>	Decreased appetite, dyspepsia, constipation, flatulence, abdominal distention, gastroesophageal reflux disease, eructation		Acute pancreatitis
<b>General disorders and administration site conditions</b>		Fatigue	Injection site reactions	
<b>Investigations</b>		Sinus tachycardia, first degree atrioventricular block (AVB)		

\* Documented, symptomatic hypoglycaemia and blood glucose  $\leq$  to 3.9 mmol/L

<sup>†</sup> Dulaglutide 1.5 mg dose only. For dulaglutide 0.75 mg, adverse reaction met frequency for next lower incidence grouping.

### Description of selected adverse reactions

#### *Hypoglycaemia*

When dulaglutide 0.75 mg and 1.5 mg were used as monotherapy or in combination with metformin alone or metformin and pioglitazone, the incidences of documented symptomatic hypoglycaemia were 5.9% to 10.9% and the rates were 0.14 to 0.62 events/patient/year, and no episodes of severe hypoglycaemia were reported.

The incidences of documented symptomatic hypoglycaemia when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with a sulphonylurea (plus metformin) were 39.0% and 40.3% and the rates were 1.67 and 1.67 events/patient/year. The severe hypoglycaemia event incidences were 0% and 0.7%, and rates were 0.00 and 0.01 events/patient/year.

The incidences when dulaglutide 0.75 mg and 1.5 mg, respectively, were used in combination with prandial insulin were 85.3% and 80.0% and rates were 35.66 and 31.06 events/patient/year. The severe hypoglycaemia event incidences were 2.4% and 3.4%, and rates were 0.05 and 0.06 events/patient/year.

#### *Gastrointestinal adverse reactions*

Cumulative reporting of gastrointestinal events up to 104 weeks with dulaglutide 0.75mg and 1.5 mg, respectively, included nausea (12.9% and 21.2 %), diarrhoea (10.7% and 13.7 %) and vomiting (6.9% and 11.5 %). These were typically mild or moderate in severity and were reported to peak during the first 2 weeks of treatment and rapidly declined over the next 4 weeks, after which the rate remained relatively constant.

In clinical pharmacology studies conducted in patients with type 2 diabetes mellitus up to 6 weeks, the majority of gastrointestinal events were reported during the first 2-3 days after the initial dose and declined with subsequent doses.

#### *Acute pancreatitis*

The incidence of acute pancreatitis in Phase II and III clinical studies was 0.07% for dulaglutide compared to 0.14% for placebo and 0.19% for comparators with or without additional background antidiabetic therapy.

#### *Pancreatic enzymes*

Dulaglutide is associated with mean increases from baseline in pancreatic enzymes (lipase and/or pancreatic amylase) of 11 % to 21 % (see section 4.4). In the absence of other signs and symptoms of acute pancreatitis, elevations in pancreatic enzymes alone are not predictive of acute pancreatitis.

#### *Heart rate increase*

Small mean increases in heart rate of 2 to 4 beats per minute (bpm) and a 1.3% and 1.4 % incidence of sinus tachycardia, with a concomitant increase from baseline  $\geq 15$  bpm, were observed with dulaglutide 0.75mg and 1.5 mg, respectively.

#### *First degree AV block/PR interval prolongation*

Small mean increases from baseline in PR interval of 2 to 3 msec and a 1.5% and 2.4 % incidence of first-degree AV block were observed with dulaglutide 0.75 mg and 1.5 mg, respectively.

#### *Immunogenicity*

In clinical studies, treatment with dulaglutide was associated with a 1.6 % incidence of treatment emergent dulaglutide anti-drug antibodies, indicating that the structural modifications in the GLP-1 and modified IgG4 parts of the dulaglutide molecule, together with high homology with native GLP-1 and native IgG4, minimise the risk of immune response against dulaglutide. Patients with dulaglutide anti-drug antibodies generally had low titres, and although the number of patients developing dulaglutide anti-drug antibodies was low, examination of the phase III data revealed no clear impact of dulaglutide anti-drug antibodies on changes in HbA1c.

#### *Hypersensitivity*

In the phase II and phase III clinical studies, systemic hypersensitivity events (e.g., urticaria, edema) were reported in 0.5 % of patients receiving dulaglutide. None of the patients with systemic hypersensitivity developed dulaglutide anti-drug antibodies.

### *Injection site reactions*

Injection site adverse events were reported in 1.9 % of patients receiving dulaglutide. Potentially immune-mediated injection site adverse events (e.g., rash, erythema) were reported in 0.7 % of patients and were usually mild.

### *Discontinuation due to an adverse event*

In studies of 26 weeks duration, the incidence of discontinuation due to adverse events was 2.6% (0.75 mg) and 6.1% (1.5 mg) for dulaglutide versus 3.7 % for placebo. Through the full study duration (up to 104 weeks), the incidence of discontinuation due to adverse events was 5.1% (0.75 mg) and 8.4 % (1.5 mg) for dulaglutide. The most frequent adverse reactions leading to discontinuation for 0.75 mg and 1.5 mg dulaglutide, respectively, were nausea (1.0%, 1.9 %), diarrhoea (0.5%, 0.6 %), and vomiting (0.4%, 0.6 %), and were generally reported within the first 4-6 weeks.

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## **4.9 Overdose**

Effects of overdose with dulaglutide in clinical studies have included gastrointestinal disorders and hypoglycaemia. In the event of overdose, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: {not yet assigned}, ATC code: {not yet assigned}.

#### Mechanism of action

Dulaglutide is a long-acting glucagon-like peptide 1 (GLP-1) receptor agonist. The molecule consists of 2 identical disulfide-linked chains, each containing a modified human GLP-1 analogue sequence covalently linked to a modified human immunoglobulin G4 (IgG4) heavy chain fragment (Fc) by a small peptide linker. The GLP-1 analog portion of dulaglutide is approximately 90 % homologous to native human GLP-1 (7-37). Native GLP-1 has a half-life of 1.5-2 minutes due to degradation by DPP-4 and renal clearance. In contrast to native GLP-1, dulaglutide is resistant to degradation by DPP-4, and has a large size that slows absorption and reduces renal clearance. These engineering features result in a soluble formulation and a prolonged half-life of 4.7 days, which makes it suitable for once-weekly subcutaneous administration. In addition, the dulaglutide molecule was engineered to prevent the Fcγ receptor-dependent immune response and to reduce its immunogenic potential.

Dulaglutide exhibits several antihyperglycaemic actions of GLP-1. In the presence of elevated glucose concentrations, dulaglutide increases intracellular cyclic AMP (cAMP) in pancreatic beta cells leading to insulin release. Dulaglutide suppresses glucagon secretion which is known to be inappropriately elevated in patients with type 2 diabetes. Lower glucagon concentrations lead to decreased hepatic glucose output. Dulaglutide also slows gastric emptying.

#### Pharmacodynamic effects

Dulaglutide improves glycaemic control through the sustained effects of lowering fasting, pre-meal and postprandial glucose concentrations in patients with type 2 diabetes starting after the first dulaglutide administration and is sustained throughout the once weekly dosing interval.

A pharmacodynamic study with dulaglutide demonstrated, in patients with type 2 diabetes, a restoration of first phase insulin secretion to a level that exceeded levels observed in healthy subjects

on placebo, and improved second phase insulin secretion in response to an intravenous bolus of glucose. In the same study, a single 1.5 mg dose of dulaglutide appeared to increase maximal insulin secretion from the  $\beta$ -cells, and to enhance  $\beta$ -cell function in subjects with type 2 diabetes mellitus as compared with placebo.

Consistent with the pharmacokinetic profile, dulaglutide has a pharmacodynamic profile suitable for once weekly administration (see section 5.2).

### Clinical efficacy and safety

#### *Glycaemic control*

The safety and efficacy of dulaglutide was evaluated in six randomised, controlled, phase III trials involving 5,171 patients with type 2 diabetes. Of these, 958 were  $\geq 65$  years of which 93 were  $\geq 75$  years. These studies included 3,136 dulaglutide-treated patients, of whom 1,719 were treated with Trulicity 1.5 mg weekly and 1,417 were treated with Trulicity 0.75 mg weekly. In all studies, dulaglutide produced clinically significant improvements in glycaemic control as measured by glycosylated haemoglobin A1c (HbA1c).

#### *Monotherapy*

Dulaglutide was studied in a 52 week active controlled monotherapy study in comparison to metformin. Trulicity 1.5 mg and 0.75 mg were superior to metformin (1500-2000 mg/day) in the reduction in HbA1c and a significantly greater proportion of patients reached an HbA1c target of  $< 7.0\%$  and  $\leq 6.5\%$  with Trulicity 1.5 mg and Trulicity 0.75 mg compared to metformin at 26 weeks.

Table 2: Results of a 52 week active controlled monotherapy study with two doses of dulaglutide in comparison to metformin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	$<7.0\%$ (%)	$\leq 6.5\%$ (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.78 <sup>††</sup>	61.5 <sup>#</sup>	46.0 <sup>##</sup>	-1.61	-2.29
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.71 <sup>††</sup>	62.6 <sup>#</sup>	40.0 <sup>#</sup>	-1.46	-1.36 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.56	53.6	29.8	-1.34	-2.22
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=269)	7.63	-0.70 <sup>††</sup>	60.0 <sup>#</sup>	42.3 <sup>##</sup>	-1.56 <sup>#</sup>	-1.93
Dulaglutide 0.75 mg once weekly (n=270)	7.58	-0.55 <sup>†</sup>	53.2	34.7	-1.00	-1.09 <sup>#</sup>
Metformin 1500-2000 mg/day (n=268)	7.60	-0.51	48.3	28.3	-1.15	-2.20

† multiplicity adjusted 1-sided p-value  $< 0.025$ , for noninferiority; †† multiplicity adjusted 1-sided p-value  $< 0.025$ , for superiority of dulaglutide to metformin, assessed for HbA1c only  
<sup>#</sup> p  $< 0.05$ , <sup>##</sup> p  $< 0.001$  dulaglutide treatment group compared to metformin

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and metformin were 0.62, 0.15, and 0.09 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed.

#### *Combination therapy with metformin*

The safety and efficacy of dulaglutide was investigated in a placebo and active controlled (sitagliptin 100 mg daily) study of 104 weeks duration, all in combination with metformin. Treatment with Trulicity 1.5 mg and 0.75 mg resulted in a superior reduction in HbA1c compared to sitagliptin at

52 weeks, accompanied by a significantly greater proportion of patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 %. These effects were sustained to the end of the study (104 weeks).

Table 3: Results of a 104 week placebo and active controlled study with two doses of dulaglutide in comparison to sitagliptin

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0 % (%)	≤6.5 % (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.22 <sup>††##</sup>	60.9 <sup>**##</sup>	46.7 <sup>**##</sup>	-2.38 <sup>**##</sup>	-3.18 <sup>**##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-1.01 <sup>††##</sup>	55.2 <sup>**##</sup>	31.0 <sup>**##</sup>	-1.97 <sup>**##</sup>	-2.63 <sup>**##</sup>
Placebo (n= 177)	8.10	0.03	21.0	12.5	-0.49	-1.47
Sitagliptin 100 mg once daily (n=315)	8.09	-0.61	37.8	21.8	-0.97	-1.46
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-1.10 <sup>††</sup>	57.6 <sup>##</sup>	41.7 <sup>##</sup>	-2.38 <sup>##</sup>	-3.03 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.87 <sup>††</sup>	48.8 <sup>##</sup>	29.0 <sup>##</sup>	-1.63 <sup>##</sup>	-2.60 <sup>##</sup>
Sitagliptin 100 mg once daily (n=315)	8.09	-0.39	33.0	19.2	-0.90	-1.53
<b>104 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=304)	8.12	-0.99 <sup>††</sup>	54.3 <sup>##</sup>	39.1 <sup>##</sup>	-1.99 <sup>##</sup>	-2.88 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=302)	8.19	-0.71 <sup>††</sup>	44.8 <sup>##</sup>	24.2 <sup>##</sup>	-1.39 <sup>##</sup>	-2.39
Sitagliptin 100 mg once daily (n=315)	8.09	-0.32	31.1	14.1	-0.47	-1.75

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide compared to sitagliptin, assessed only for HbA1c at 52 and 104 weeks

## multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\*\* p < 0.001 dulaglutide treatment group compared to placebo

## p < 0.001 dulaglutide treatment group compared to sitagliptin

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and sitagliptin were 0.19, 0.18, and 0.17 episodes/patient/year, respectively. No cases of severe hypoglycaemia with dulaglutide were observed.

The safety and efficacy of dulaglutide was also investigated in an active controlled study (liraglutide 1.8 mg daily) of 26 weeks duration, both in combination with metformin. Treatment with Trulicity 1.5 mg resulted in similar lowering of HbA1c and patients achieving HbA1c targets of < 7.0 % and ≤ 6.5 % compared to liraglutide.

Table 4: Results of a 26 week active controlled study of one dose of dulaglutide in comparison to liraglutide

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0 % (%)	≤6.5 % (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=299)	8.06	-1.42 <sup>‡</sup>	68.3	54.6	-1.93	-2.90 <sup>#</sup>
Liraglutide <sup>+</sup> 1.8 mg daily (n=300)	8.05	-1.36	67.9	50.9	-1.90	-3.61

<sup>‡</sup> 1-sided p-value  $p < 0.001$ , for noninferiority of dulaglutide compared to liraglutide, assessed only for HbA1c.

<sup>#</sup>  $p < 0.05$  dulaglutide treatment group compared to liraglutide.

<sup>+</sup> Patients randomised to liraglutide were initiated at a dose of 0.6 mg/day. After Week 1, patients were up-titrated to 1.2 mg/day and then at Week 2 to 1.8 mg/day.

The rate of documented symptomatic hypoglycaemia with Trulicity 1.5 mg was 0.12 episodes/patient/year and with liraglutide was 0.29 episodes/patient/year. No cases of severe hypoglycaemia were observed

#### Combination therapy with metformin and sulphonylurea

In an active controlled study of 78 weeks duration, dulaglutide was compared to insulin glargine, both on a background of metformin and a sulphonylurea. At 52 weeks, Trulicity 1.5 mg demonstrated superior lowering in HbA1c to insulin glargine which was maintained at 78 weeks; whereas lowering in HbA1c with Trulicity 0.75 mg was non-inferior to insulin glargine. With Trulicity 1.5 mg a significantly higher percentage of patients reached a target HbA1c of  $< 7.0\%$  or  $\leq 6.5\%$  at 52 and 78 weeks compared to insulin glargine.

Table 5: Results of a 78 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-1.08 <sup>††</sup>	53.2 <sup>##</sup>	27.0 <sup>##</sup>	-1.50	-1.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.76 <sup>†</sup>	37.1	22.5 <sup>#</sup>	-0.87 <sup>##</sup>	-1.33 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.63	30.9	13.5	-1.76	1.44
<b>78 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=273)	8.18	-0.90 <sup>††</sup>	49.0 <sup>##</sup>	28.1 <sup>##</sup>	-1.10 <sup>#</sup>	-1.96 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=272)	8.13	-0.62 <sup>†</sup>	34.1	22.1	-0.58 <sup>##</sup>	-1.54 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=262)	8.10	-0.59	30.5	16.6	-1.58	1.28

<sup>†</sup> multiplicity adjusted 1-sided p-value  $< 0.025$ , for noninferiority; <sup>††</sup> multiplicity adjusted 1-sided p-value  $< 0.025$ , for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

<sup>#</sup>  $p < 0.05$ , <sup>##</sup>  $p < 0.001$  dulaglutide treatment group compared to insulin glargine

<sup>+</sup> Insulin glargine doses were adjusted utilising an algorithm with a fasting plasma glucose target of  $< 5.6$  mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 1.67, 1.67, and 3.02 episodes/patient/year, respectively. Two cases of severe hypoglycaemia were observed with Trulicity 1.5mg and two cases of severe hypoglycaemia were observed with insulin glargine.



*Combination therapy with metformin and pioglitazone*

In a placebo and active (exenatide twice daily) controlled study, both in combination with metformin and pioglitazone, Trulicity 1.5 mg and 0.75 mg demonstrated superiority for HbA1c reduction in comparison to placebo and exenatide, accompanied by a significantly a greater percentage of patients achieving HbA1c targets of < 7.0 % or ≤ 6.5 %

Table 6: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to exenatide

	Baseline HbA1c	Mean change in HbA1c	Patients at target HbA1c		Change in FBG	Change in body weight
	(%)	(%)	<7.0% (%)	≤6.5% (%)	(mmol/L)	(kg)
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.51 <sup>††, ††</sup>	78.2 <sup>**##</sup>	62.7 <sup>**##</sup>	-2.36 <sup>**##</sup>	-1.30 <sup>**</sup>
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.30 <sup>††/††</sup>	65.8 <sup>**/##</sup>	53.2 <sup>**/##</sup>	-1.90 <sup>**/##</sup>	0.20 <sup>*/##</sup>
Placebo (n=141)	8.06	-0.46	42.9	24.4	-0.26	1.24
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.99	52.3	38.0	-1.35	-1.07
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=279)	8.10	-1.36 <sup>††</sup>	70.8 <sup>##</sup>	57.2 <sup>##</sup>	-2.04 <sup>##</sup>	-1.10
Dulaglutide 0.75 mg once weekly (n=280)	8.05	-1.07 <sup>††</sup>	59.1 <sup>#</sup>	48.3 <sup>##</sup>	-1.58 <sup>#</sup>	0.44 <sup>#</sup>
Exenatide <sup>+</sup> 10 mcg twice daily (n=276)	8.07	-0.80	49.2	34.6	-1.03	-0.80

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to exenatide, assessed for HbA1c only

†† multiplicity adjusted 1-sided p-value < 0.001 for superiority of dulaglutide compared to placebo, assessed for HbA1c only

\* p < 0.05, \*\*p < 0.001 dulaglutide treatment group compared to placebo

# p < 0.05, ##p < 0.001 dulaglutide treatment group compared to exenatide

+ Exenatide dose was 5 mcg twice daily for first 4 weeks and 10 mcg twice daily thereafter

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and exenatide twice daily were 0.19, 0.14, and 0.75 episodes/patient/year, respectively. No cases of severe hypoglycaemia were observed for dulaglutide and two cases of severe hypoglycaemia were observed with exenatide twice daily.

*Combination therapy with prandial insulin with or without metformin*

In this study, patients on 1 or 2 insulin injections per day prior to study entry, discontinued their prestudy insulin regimen and were randomised to dulaglutide once weekly or insulin glargine once daily, both in combination with prandial insulin lispro three times daily, with or without metformin. At 26 weeks, both Trulicity 1.5 mg and 0.75mg were superior to insulin glargine in lowering of HbA1c and this effect was sustained at 52 weeks. . A greater percentage of patients achieved HbA1c targets of < 7.0 % or ≤ 6.5 % at 26 weeks and < 7.0 % at 52 weeks than with insulin glargine.

Table 7: Results of a 52 week active controlled study with two doses of dulaglutide in comparison to insulin glargine

	Baseline HbA1c (%)	Mean change in HbA1c (%)	Patients at target HbA1c		Change in FBG (mmol/L)	Change in body weight (kg)
			<7.0% (%)	≤6.5% (%)		
<b>26 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.64 <sup>††</sup>	67.6 <sup>#</sup>	48.0 <sup>#</sup>	-0.27 <sup>###</sup>	-0.87 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.59 <sup>††</sup>	69.0 <sup>#</sup>	43.0	0.22 <sup>###</sup>	0.18 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.41	56.8	37.5	-1.58	2.33
<b>52 weeks</b>						
Dulaglutide 1.5 mg once weekly (n=295)	8.46	-1.48 <sup>††</sup>	58.5 <sup>#</sup>	36.7	0.08 <sup>###</sup>	-0.35 <sup>##</sup>
Dulaglutide 0.75 mg once weekly (n=293)	8.40	-1.42 <sup>††</sup>	56.3	34.7	0.41 <sup>###</sup>	0.86 <sup>##</sup>
Insulin glargine <sup>+</sup> once daily (n=296)	8.53	-1.23	49.3	30.4	-1.01	2.89

†† multiplicity adjusted 1-sided p-value < 0.025, for superiority of dulaglutide to insulin glargine, assessed for HbA1c only

# p < 0.05, ### p < 0.001 dulaglutide treatment group compared to insulin glargine

+ Insulin glargine doses were adjusted utilizing an algorithm with a fasting plasma glucose target of < 5.6 mmol/L

The rates of documented symptomatic hypoglycaemia with Trulicity 1.5 mg and 0.75 mg, and insulin glargine were 31.06, 35.66, and 40.95 episodes/patient/year, respectively. Ten patients reported severe hypoglycaemia with Trulicity 1.5 mg, seven with Trulicity 0.75 mg, and fifteen with insulin glargine.

#### *Fasting blood glucose*

Treatment with dulaglutide resulted in significant reductions from baseline in fasting blood glucose. The majority of the effect on fasting blood glucose concentrations occurred by 2 weeks. The improvement in fasting glucose was sustained through the longest study duration of 104 weeks.

#### *Postprandial glucose*

Treatment with dulaglutide resulted in significant reductions in mean post prandial glucose from baseline (changes from baseline to primary time point -1.95 mmol/L to -4.23 mmol/L).

#### *Beta-cell function*

Clinical studies with dulaglutide have indicated enhanced beta-cell function as measured by homeostasis model assessment (HOMA2-%B). The durability of effect on beta-cell function was maintained through the longest study duration of 104 weeks.

#### *Body weight*

Trulicity 1.5 mg was associated with sustained weight reduction over the duration of studies (from baseline to final time point -0.35 kg to -2.90 kg). Changes in body weight with Trulicity 0.75 mg ranged from 0.86 kg to -2.63 kg. Reduction in body weight was observed in patients treated with dulaglutide irrespective of nausea, though the reduction was numerically larger in the group with nausea.

#### *Patient reported outcomes*

Dulaglutide significantly improved total treatment satisfaction compared to exenatide twice daily. In addition, there was significantly lower perceived frequency of hyperglycaemia and hypoglycaemia compared to exenatide twice daily.

### *Blood pressure*

The effect of dulaglutide on blood pressure as assessed by Ambulatory Blood Pressure Monitoring was evaluated in a study of 755 patients with type 2 diabetes. Treatment with dulaglutide provided reductions in systolic blood pressure (SBP) (-2.8 mmHg difference compared to placebo) at 16 weeks. There was no difference in diastolic blood pressure (DBP). Similar results for SBP and DBP were demonstrated at the final 26 week time point of the study.

### *Cardiovascular Evaluation*

In a meta-analysis of phase II and III studies, a total of 51 patients (dulaglutide: 26 [N = 3,885]; all comparators: 25 [N = 2,125]) experienced at least one cardiovascular (CV) event (death due to CV causes, nonfatal MI, nonfatal stroke, or hospitalisation for unstable angina). The results showed that there was no increase in CV risk with dulaglutide compared with control therapies (HR: 0.57; CI: [0.30, 1.10]).

### Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies with dulaglutide in one or more subsets of the paediatric population in the treatment of type 2 diabetes mellitus (see section 4.2 for information on paediatric use).

## **5.2 Pharmacokinetic properties**

### Absorption

Following subcutaneous administration to patients with type 2 diabetes, dulaglutide reaches peak plasma concentrations in 48 hours. The mean peak ( $C_{max}$ ) and total (AUC) exposures were approximately 114 ng/ml and 14,000 ng·h/ml, respectively, after multiple subcutaneous 1.5 mg doses of dulaglutide in patients with type 2 diabetes. Steady-state plasma concentrations were achieved between 2 to 4 weeks of once-weekly administration of dulaglutide (1.5 mg). Exposures after subcutaneous administration of single dulaglutide (1.5 mg) doses in the abdomen, thigh, or upper arm were comparable. The mean absolute bioavailability of dulaglutide following single-dose subcutaneous administration of single 1.5 mg and 0.75 mg doses was 47 % and 65%, respectively.

### Distribution

The mean volume of distribution after subcutaneous administration of dulaglutide 0.75 mg and 1.5 mg at steady state in patients with type 2 diabetes mellitus were approximately 19.2 L and 17.4 L.

### Biotransformation

Dulaglutide is presumed to be degraded into its component amino acids by general protein catabolism pathways.

### Elimination

The mean apparent clearance of dulaglutide 0.75 mg and 1.5 mg at steady state was 0.073 L/h and 0.107 L/h with an elimination half-life of 4.5 and 4.7 days, respectively.

### Special populations

#### *Elderly patients (> 65 years old)*

Age had no clinically relevant effect on the pharmacokinetic and pharmacodynamic properties of dulaglutide.

#### *Gender and race*

Gender and race had no clinically meaningful effect on the pharmacokinetics of dulaglutide.

#### *Body weight or body mass index*

Pharmacokinetic analyses have demonstrated a statistically significant inverse relationship between body weight or body mass index (BMI) and dulaglutide exposure, although there was no clinically relevant impact of weight or BMI on glycaemic control.

#### *Patients with renal impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study and were generally similar between healthy subjects and patients with mild to severe renal impairment (CrCl < 30 ml/min), including end stage renal disease (requiring dialysis). In clinical studies, the dulaglutide safety profile in patients with moderate renal impairment was similar to the overall T2DM population. These studies did not include patients with severe renal impairment or end stage renal disease.

#### *Patients with hepatic impairment*

The pharmacokinetics of dulaglutide were evaluated in a clinical pharmacology study, where subjects with hepatic impairment had statistically significant decreases in dulaglutide exposure of up to 30 % to 33 % for mean C<sub>max</sub> and AUC, respectively, compared to healthy controls. There was a general increase in t<sub>max</sub> of dulaglutide with increased hepatic impairment. However, no trend in dulaglutide exposure was observed relative to the degree of hepatic impairment. These effects were not considered to be clinically relevant.

#### *Paediatric population*

Studies characterising the pharmacokinetics of dulaglutide in paediatric patients have not been performed.

### **5.3 Preclinical safety data**

Non-clinical data reveal no special hazards for humans based on conventional studies of safety pharmacology or repeat-dose toxicity.

In a 6-month carcinogenicity study in transgenic mice, there was no tumorigenic response. In a 2-year carcinogenicity study in rats, at  $\geq 7$  times the human clinical exposure following 1.5 mg dulaglutide per week, dulaglutide caused statistically significant, dose-related increases in the incidence of thyroid C-cell tumours (adenomas and carcinomas combined). The clinical relevance of these findings is currently unknown.

During the fertility studies, a reduction in the number of corpora lutea and prolonged oestrous cycle were observed at dose levels that were associated with decreased food intake and body weight gain in maternal animals; however, no effects on indices of fertility and conception or embryonic development were observed. In reproductive toxicology studies, skeletal effects and a reduction in foetal growth were observed in the rat and rabbit at exposures of dulaglutide 11- to 44-fold higher than those proposed clinically, but no foetal malformations were observed. Treatment of rats throughout pregnancy and lactation produced memory deficits in female offspring at exposures that were 16-fold higher than those proposed clinically.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Sodium citrate  
Citric acid, anhydrous  
Mannitol  
Polysorbate 80  
Water for injections

### **6.2 Incompatibilities**

In the absence of compatibility studies this medicinal product must not be mixed with other medicinal products.

### **6.3 Shelf life**

2 years

### **6.4 Special precautions for storage**

Store in a refrigerator (2°C – 8°C).

Do not freeze.

Store in original package in order to protect from light.

#### In use:

Trulicity may be stored unrefrigerated for up to 14 days at a temperature not above 30°C.

### **6.5 Nature and contents of container**

Glass syringe (type I).

Each pre-filled syringe contains 0.5 ml of solution.

Packs of 4 pre-filled syringes and multipack of 12 (3 packs of 4) pre-filled syringes. Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

#### Instructions for use

The pre-filled syringe is for single-use only.

The instructions for using the syringe, included with the package leaflet, must be followed carefully.

Trulicity should not be used if particles appear or if the solution is cloudy and/or coloured.

Trulicity that has been frozen must not be used.

## **7. MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V., Grootslag 1-5, NL-3991 RA Houten, The Netherlands.

## **8. MARKETING AUTHORISATION NUMBER**

EU/1/14/956/009

EU/1/14/956/010

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation:

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>

## **ANNEX II**

- A. MANUFACTURERS OF THE BIOLOGICAL ACTIVE SUBSTANCE AND MANUFACTURER RESPONSIBLE FOR BATCH RELEASE**
- B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE**
- C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING AUTHORISATION**
- D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE USE OF THE MEDICINAL PRODUCT**

**A. MANUFACTURERS OF THE BIOLOGICAL ACTIVE SUBSTANCE AND MANUFACTURER RESPONSIBLE FOR BATCH RELEASE**

Name and address of the manufacturers of the biological active substance

Eli Lilly S.A.  
Dunderrow  
Kinsale  
Co. Cork  
Ireland

Name and address of the manufacturer(s) responsible for batch release

Eli Lilly Italia S.p.A.  
Via Gramsci 731/733  
50019, Sesto Fiorentino  
Firenze (FI)  
Italy

**B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE**

Medicinal product subject to medical prescription.

**C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING AUTHORISATION**

• **Periodic safety update reports**

The marketing authorisation holder shall submit the first periodic safety update report for this product within 6 months following authorisation. Subsequently, the marketing authorisation holder shall submit periodic safety update reports for this product in accordance with the requirements set out in the list of Union reference dates (EURD list) provided for under Article 107c(7) of Directive 2001/83/EC and published on the European medicines web-portal.

**D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE USE OF THE MEDICINAL PRODUCT**

• **Risk Management Plan (RMP)**

The MAH shall perform the required pharmacovigilance activities and interventions detailed in the agreed RMP presented in Module 1.8.2 of the Marketing Authorisation and any agreed subsequent updates of the RMP.

An updated RMP should be submitted:

- At the request of the European Medicines Agency;
- Whenever the risk management system is modified, especially as the result of new information being received that may lead to a significant change to the benefit/risk profile or as the result of an important (pharmacovigilance or risk minimisation) milestone being reached.

If the submission of a PSUR and the update of a RMP coincide, they can be submitted at the same time.

**ANNEX III**  
**LABELLING AND PACKAGE LEAFLET**



## **A. LABELLING**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON - PRE-FILLED PEN**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 0.75 mg solution for injection in pre-filled pen  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled pen contains 0.75 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
2 pre-filled pens of 0.5 ml solution  
4 pre-filled pens of 0.5 ml solution

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze.  
Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/001 2 pre-filled pens  
EU/1/14/956/002 4 pre-filled pens

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 0.75 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**INTERMEDIATE CARTON (without Blue Box) component of a multipack - PRE-FILLED PEN**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 0.75 mg solution for injection in pre-filled pen  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled pen contains 0.75 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 4 pre-filled pens of 0.5 ml solution. Component of a multipack, can't be sold separately.

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze.  
Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/003

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 0.75 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON (with Blue Box) – multipack - PRE-FILLED PEN**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 0.75 mg solution for injection in pre-filled pen  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled pen contains 0.75 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 12 (3 packs of 4) pre-filled pens of 0.5 ml solution.

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.  
Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze.  
Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/003

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 0.75 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON - PRE-FILLED PEN**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 1.5 mg solution for injection in pre-filled pen  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled pen contains 1.5 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
2 pre-filled pens of 0.5ml solution  
4 pre-filled pens of 0.5ml solution

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.



**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze.  
Store in original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/006 2 pre-filled pens  
EU/1/14/956/007 4 pre-filled pens

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 1.5 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**INTERMEDIATE CARTON (without Blue Box) component of a multipack - PRE-FILLED PEN**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 1.5 mg solution for injection in pre-filled pen  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled pen contains 1.5 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 4 pre-filled pens of 0.5 ml solution. Component of a multipack, can't be sold separately.

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze.  
Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/008

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 1.5 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON (with Blue Box) multipack - PRE-FILLED PEN**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 1.5 mg solution for injection in pre-filled pen  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled pen contains 1.5 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 12 (3 packs of 4) pre-filled pens of 0.5 ml solution.

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.  
Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze.  
Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/008

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 1.5 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON - PRE-FILLED SYRINGE**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 0.75 mg solution for injection in pre-filled syringe  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe contains 0.75 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
4 pre-filled syringes of 0.5 ml solution

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

If seal is broken before first use, contact pharmacist.

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.

Do not freeze.

Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/004

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

TRULICITY 0.75 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**INTERMEDIATE CARTON (without Blue Box) component of a multipack - PRE-FILLED SYRINGE**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 0.75 mg solution for injection in pre-filled syringe  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe contains 0.75 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 4 pre-filled syringes of 0.5 ml solution. Component of a multipack, can't be sold separately

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.



**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

If seal is broken before first use, contact pharmacist.

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.

Do not freeze.

Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/005

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

TRULICITY 0.75 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON (with Blue Box) multipack - PRE-FILLED SYRINGE**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 0.75 mg solution for injection in pre-filled syringe  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe contains 0.75 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 12 (3 packs of 4) pre-filled syringes of 0.5 ml solution.

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.  
Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

If seal is broken before first use, contact pharmacist.

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.

Do not freeze.

Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/005

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

TRULICITY 0.75 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON - PRE-FILLED SYRINGE**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 1.5 mg solution for injection in pre-filled syringe  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe contains 1.5 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
4 pre-filled syringes of 0.5 ml solution

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

If seal is broken before first use, contact pharmacist.

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.

Do not freeze.

Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.

Grootslag 1-5, 3991 RA Houten

The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/009

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

TRULICITY 1.5 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**INTERMEDIATE CARTON (without Blue Box) component of a multipack - PRE-FILLED SYRINGE**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 1.5 mg solution for injection in pre-filled syringe  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe contains 1.5 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 4 pre-filled syringes of 0.5 ml solution. Component of a multipack, can't be sold separately

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.

Mark the day of the week you want to use your medicine to help you remember.

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1							
Week 2							
Week 3							
Week 4							

Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

If seal is broken before first use, contact pharmacist.

**8. EXPIRY DATE**

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.

Do not freeze.

Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/010

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

TRULICITY 1.5 mg

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

**OUTER CARTON (with Blue Box) multipack - PRE-FILLED SYRINGE**

**1. NAME OF THE MEDICINAL PRODUCT**

Trulicity 1.5 mg solution for injection in pre-filled syringe  
dulaglutide

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe contains 1.5 mg of dulaglutide in 0.5 ml solution

**3. LIST OF EXCIPIENTS**

Excipients: Sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80; water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
Multi-pack: 12 (3 packs of 4) pre-filled syringes of 0.5 ml solution.

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Once weekly.  
Subcutaneous use.

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

If seal is broken before first use, contact pharmacist.

**8. EXPIRY DATE**

EXP



**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.

Do not freeze.

Store in the original package in order to protect from light.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Eli Lilly Nederland B.V.  
Grootslag 1-5, 3991 RA Houten  
The Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/14/956/010

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

TRULICITY 1.5 mg

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS  
PRE-FILLED PEN LABEL**

**1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Trulicity 0.75 mg solution for injection in pre-filled pen  
dulaglutide  
Subcutaneous use

**2. METHOD OF ADMINISTRATION**

Once weekly

**3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT**

0.5 ml

**6. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS  
PRE-FILLED PEN LABEL**

**1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Trulicity 1.5 mg solution for injection in pre-filled pen  
dulaglutide  
Subcutaneous use

**2. METHOD OF ADMINISTRATION**

Once weekly

**3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT**

0.5 ml

**6. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS  
PRE-FILLED SYRINGE LABEL**

**1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Trulicity 0.75 mg injection  
dulaglutide  
SC

**2. METHOD OF ADMINISTRATION**

Once weekly

**3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT**

0.5 ml

**6. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS  
PRE-FILLED SYRINGE LABEL**

**1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Trulicity 1.5 mg injection  
dulaglutide  
SC

**2. METHOD OF ADMINISTRATION**

Once weekly

**3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT**

0.5 ml

**6. OTHER**

**B. PACKAGE LEAFLET**

## Package leaflet: Information for the patient

### Trulicity 0.75 mg solution for injection in pre-filled pen Trulicity 1.5 mg solution for injection in pre-filled pen dulaglutide

▼ This medicine is subject to additional monitoring. This will allow quick identification of new safety information. You can help by reporting any side effects you may get. See the end of section 4 for how to report side effects.

#### **Read all of this leaflet carefully before you start taking this medicine because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor, pharmacist or nurse.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

#### **What is in this leaflet**

1. What Trulicity is and what it is used for
2. What you need to know before you use Trulicity
3. How to use Trulicity
4. Possible side effects
5. How to store Trulicity
6. Contents of the pack and other information

#### **1. What Trulicity is and what it is used for**

Trulicity contains an active substance called dulaglutide and is used to lower blood sugar (glucose) in adults with type 2 diabetes mellitus.

Type 2 diabetes is a condition in which your body does not make enough insulin, and the insulin that your body produces does not work as well as it should. Your body can also make too much sugar. When this happens, sugar (glucose) builds up in the blood.

Trulicity is used:

- on its own if your blood sugar is not properly controlled by diet and exercise alone, and you can't take metformin (another diabetes medicine).
- or with other medicines for diabetes when they are not enough to control your blood sugar levels. These other medicines may be medicines taken by mouth and/or mealtime insulin given by injection.

It is important to continue to follow the advice on diet and exercise given to you by your doctor, pharmacist or nurse.

#### **2. What you need to know before you use Trulicity**

##### **Do not use Trulicity**

- if you are allergic to dulaglutide or any of the other ingredients of this medicine (listed in section 6).

##### **Warnings and precautions**

Talk to your doctor, pharmacist or nurse before using Trulicity if:

- you have type 1 diabetes (the type that usually starts when you are young and your body does not produce any insulin) as this medicine may not be right for you.
- you have diabetic ketoacidosis (a complication of diabetes that occurs when the body is unable to break down glucose because there is not enough insulin). The signs include rapid weight loss, feeling sick or being sick, a sweet smell to your breath, a sweet or metallic taste in your mouth, or a different odour to your urine or sweat.
- you have severe problems with food digestion or food remaining in your stomach for longer than normal (including gastroparesis).
- you have ever had pancreatitis (inflammation of the pancreas) which causes severe pain in the stomach and back which does not go away.
- you are taking a sulphonylurea or insulin for your diabetes, as low blood sugar (hypoglycaemia) can occur. Your doctor may need to change your dose of these other medicines to reduce this risk.

### **Children and adolescents**

Trulicity is not recommended for children and adolescents under 18 years of age because it has not been studied in these patients.

### **Other medicines and Trulicity**

Tell your doctor, pharmacist or nurse if you are using, have recently used or might use any other medicine.

Especially tell your doctor:

- if you are using other medicines that lower the amount of sugar in your blood, such as insulin or a medicine containing sulphonylurea. Your doctor may want to lower the dose of these other medicines to prevent you from getting low blood sugar levels (hypoglycaemia). Ask your doctor, pharmacist or nurse if you are not sure what your other medicines contain.

### **Pregnancy and breast-feeding**

It is not known if dulaglutide could harm your unborn child. Women who could become pregnant should use contraception during treatment with dulaglutide. Tell your doctor if you are pregnant, think you may be pregnant or are planning to have a baby, as Trulicity should not be used during pregnancy. Talk to your doctor about the best way to control your blood sugar while you are pregnant.

Talk to your doctor if you would like to or are breast-feeding before taking this medicine. Do not use Trulicity if you are breast-feeding. It is not known if dulaglutide passes into human breast milk.

### **Driving and using machines**

If you use Trulicity in combination with a sulphonylurea or insulin, low blood sugar (hypoglycaemia) may occur which may reduce your ability to concentrate. Please keep this in mind in all situations where you might put yourself and others at risk (e.g. driving a car or using machines).

## **3. How to use Trulicity**

Always use this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure how to use this medicine.

When used alone, the recommended dose is 0.75 mg once a week.

When used with other medicines for diabetes, the recommended dose is 1.5 mg once a week. In certain situations, for example if you are 75 years or older, your doctor may recommend a starting dose of 0.75 mg once a week.

Each pen contains one weekly dose of Trulicity (0.75 mg or 1.5 mg). Each pen delivers only one dose.

You can use your Trulicity at any time of the day, with or without meals. You should use it on the same day each week if you can. To help you remember, you may wish to tick the day of the week when you inject your first dose on the box that your Trulicity comes in, or on a calendar.



Trulicity is injected under the skin (subcutaneous injection) of your stomach area (abdomen) or upper leg (thigh). If the injection is given by someone else, they may inject in your upper arm.

If you want to do so, you can use the same area of your body each week. But be sure to choose a different injection site within that area.

It is important that you test your blood glucose levels as instructed by your doctor, pharmacist or nurse, if you are taking Trulicity with a sulphonylurea or mealtime insulin.

Read the “Instructions for Use” for the pen carefully before using Trulicity.

**If you use more Trulicity than you should**

If you use more Trulicity than you should talk to your doctor immediately. Too much Trulicity may make your blood sugar too low (hypoglycaemia) and can make you feel sick or be sick.

**If you forget to use Trulicity**

If you forget to inject a dose, and if there are **at least 3 days** before your next dose is due, then inject your dose as soon as possible. Inject your next dose on your regular scheduled day.

If there are **less than 3 days** before your next dose is due, skip the dose and inject the next one on your regular scheduled day.

Do not use a double dose to make up for a forgotten dose.

You can also change the day of the week on which you inject Trulicity if necessary, as long as it has been at least 3 days since your last dose of Trulicity.

**If you stop using Trulicity**

Do not stop using Trulicity without talking with your doctor. If you stop using Trulicity, your blood sugar levels can increase.

If you have any further questions on the use of this medicine, ask your doctor, pharmacist or nurse.

**4. Possible side effects**

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Very common side effects with dulaglutide that may affect more than 1 in 10 people using this medicine are:

- Nausea (feeling sick)
- Vomiting (being sick)
- Diarrhoea
- Abdominal (stomach) pain.

These side effects are usually not severe. They are most common when first starting dulaglutide but decrease over time in most patients.

Hypoglycaemia (low blood sugar) is very common when dulaglutide is used with medicines that contain metformin, a sulphonylurea and/or insulin. If you are taking a sulphonylurea or mealtime insulin, the dose may need to be lowered while you use dulaglutide.

Hypoglycaemia is common (may affect up to 1 in 10 people using this medicine) when dulaglutide is used alone or with both metformin and pioglitazone together.

Symptoms of low blood sugar may include headache, drowsiness, weakness, dizziness, feeling hungry, confusion, irritability, fast heartbeat and sweating. Your doctor should tell you how to treat low blood sugar.

Other common side effects:

- Feeling less hungry (decreased appetite)
- Indigestion
- Constipation
- Gas (flatulence)
- Bloating of the stomach
- Gastroesophageal reflux disease - a disease caused by stomach acid coming up into the tube from your stomach to your mouth
- Burping
- Feeling tired
- Increased heart rate
- Slowing of the electrical currents in the heart

Uncommon side effects (may affect up to 1 in 100 people using this medicine):

- Injection site reactions (e.g. rash or redness)

Rare side effects (may affect up to 1 in 1,000 people using this medicine):

- Inflamed pancreas (acute pancreatitis)

### **Reporting of side effects**

If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via [the national reporting system listed in Appendix V](#). By reporting side effects, you can help provide more information on the safety of this medicine.

## **5. How to store Trulicity**

Keep this medicine out of the sight and reach of children.

Do not use this medicine after the expiry date which is stated on the pen label and on the carton after EXP.

The expiry date refers to the last day of that month.

Store in a refrigerator (2°C - 8°C). Do not freeze.

Store in the original packaging in order to protect from light.

Trulicity can be taken out of the fridge for up to 14 days at a temperature not above 30°C.

Do not use this medicine if you notice that the pen is damaged, or the medicine is cloudy, discoloured or has particles in it.

Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

## **6. Contents of the pack and other information**

### **What Trulicity contains**

The active substance is dulaglutide.

- *Trulicity 0.75 mg*: Each pre-filled pen contains 0.75 mg of dulaglutide in 0.5 ml solution.
- *Trulicity 1.5 mg*: Each pre-filled pen contains 1.5 mg of dulaglutide in 0.5 ml solution.

The other ingredients are sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80 and water for injections.

**What Trulicity looks like and contents of the pack**

Trulicity is a clear, colourless, solution for injection (injection) in a pre-filled pen.

Each pre-filled pen contains 0.5 ml solution.

The pre-filled pen is for single-use only.

Pack sizes of 2, 4 or multipacks of 12 (3 packs of 4) pre-filled pens. Not all pack sizes may be available in your country.

**Marketing Authorisation Holder**

Eli Lilly Nederland B.V., Grootslag 1-5, NL-3991 RA Houten, The Netherlands.

**Manufacturer**

Eli Lilly Italia S.p.A., Via Gramsci 731/733, 50019, Sesto Fiorentino, Firenze (FI), Italy

For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder:

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Eli Lilly and Company Limited  
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**This leaflet was last revised in**

**Other sources of information**

Detailed information on this medicine is available on the European Medicines Agency web site:  
<http://www.ema.europa.eu>.

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## Package leaflet: Information for the patient

### Trulicity 0.75 mg solution for injection in pre-filled syringe Trulicity 1.5 mg solution for injection in pre-filled syringe dulaglutide

▼ This medicine is subject to additional monitoring. This will allow quick identification of new safety information. You can help by reporting any side effects you may get. See the end of section 4 for how to report side effects.

#### **Read all of this leaflet carefully before you start taking this medicine because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor, pharmacist or nurse.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

#### **What is in this leaflet**

1. What Trulicity is and what it is used for
2. What you need to know before you use Trulicity
3. How to use Trulicity
4. Possible side effects
5. How to store Trulicity
6. Contents of the pack and other information

#### **1. What Trulicity is and what it is used for**

Trulicity contains an active substance called dulaglutide and is used to lower blood sugar (glucose) in adults with type 2 diabetes mellitus.

Type 2 diabetes is a condition in which your body does not make enough insulin, and the insulin that your body produces does not work as well as it should. Your body can also make too much sugar. When this happens, sugar (glucose) builds up in the blood.

Trulicity is used:

- on its own if your blood sugar is not properly controlled by diet and exercise alone, and you can't take metformin (another diabetes medicine).
- or with other medicines for diabetes when they are not enough to control your blood sugar levels. These other medicines may be medicines taken by mouth and/or mealtime insulin given by injection.

It is important to continue to follow the advice on diet and exercise given to you by your doctor, pharmacist or nurse.

#### **2. What you need to know before you use Trulicity**

##### **Do not use Trulicity**

- if you are allergic to dulaglutide or any of the other ingredients of this medicine (listed in section 6).

##### **Warnings and precautions**

Talk to your doctor, pharmacist or nurse before using Trulicity if:

- you have type 1 diabetes (the type that usually starts when you are young and your body does not produce any insulin) as this medicine may not be right for you.
- you have diabetic ketoacidosis (a complication of diabetes that occurs when the body is unable to break down glucose because there is not enough insulin). The signs include rapid weight loss, feeling sick or being sick, a sweet smell to your breath, a sweet or metallic taste in your mouth, or a different odour to your urine or sweat.
- you have severe problems with food digestion or food remaining in your stomach for longer than normal (including gastroparesis).
- you have ever had pancreatitis (inflammation of the pancreas) which causes severe pain in the stomach and back which does not go away.
- you are taking a sulphonylurea or insulin for your diabetes, as low blood sugar (hypoglycaemia) can occur. Your doctor may need to change your dose of these other medicines to reduce this risk.

### **Children and adolescents**

Trulicity is not recommended for children and adolescents under 18 years of age because it has not been studied in these patients.

### **Other medicines and Trulicity**

Tell your doctor, pharmacist or nurse if you are using, have recently used or might use any other medicine.

Especially tell your doctor:

- if you are using other medicines that lower the amount of sugar in your blood, such as insulin or a medicine containing sulphonylurea. Your doctor may want to lower the dose of these other medicines to prevent you from getting low blood sugar levels (hypoglycaemia). Ask your doctor, pharmacist or nurse if you are not sure what your other medicines contain.

### **Pregnancy and breast-feeding**

It is not known if dulaglutide could harm your unborn child. Women who could become pregnant should use contraception during treatment with dulaglutide. Tell your doctor if you are pregnant, think you may be pregnant or are planning to have a baby, as Trulicity should not be used during pregnancy. Talk to your doctor about the best way to control your blood sugar while you are pregnant.

Talk to your doctor if you would like to or are breast-feeding before taking this medicine. Do not use Trulicity if you are breast-feeding. It is not known if dulaglutide passes into human breast milk.

### **Driving and using machines**

If you use Trulicity in combination with a sulphonylurea or insulin, low blood sugar (hypoglycaemia) may occur which may reduce your ability to concentrate. Please keep this in mind in all situations where you might put yourself and others at risk (e.g. driving a car or using machines).

## **3. How to use Trulicity**

Always use this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure how to use this medicine.

When used alone, the recommended dose is 0.75 mg once a week.

When used with other medicines for diabetes, the recommended dose is 1.5 mg once a week. In certain situations, for example if you are 75 years or older, your doctor may recommend a starting dose of 0.75 mg once a week.

Each syringe contains one weekly dose of Trulicity (0.75 mg or 1.5 mg). Each syringe delivers only one dose.

You can use your Trulicity at any time of the day, with or without meals. You should use it on the same day each week if you can. To help you remember, you may wish to tick the day of the week when you inject your first dose on the box that your Trulicity comes in, or on a calendar.

Trulicity is injected under the skin (subcutaneous injection) of your stomach area (abdomen) or upper leg (thigh). If the injection is given by someone else, they may inject in your upper arm.

If you want to do so, you can use the same area of your body each week. But be sure to choose a different injection site within that area.

It is important that you test your blood glucose levels as instructed by your doctor, pharmacist or nurse, if you are taking Trulicity with a sulphonylurea or mealtime insulin.

Read the “Instructions for Use” for the syringe carefully before using Trulicity.

#### **If you use more Trulicity than you should**

If you use more Trulicity than you should talk to your doctor immediately. Too much Trulicity may make your blood sugar too low (hypoglycaemia) and can make you feel sick or be sick.

#### **If you forget to use Trulicity**

If you forget to inject a dose, and if there are **at least 3 days** before your next dose is due, then inject your dose as soon as possible. Inject your next dose on your regular scheduled day.

If there are **less than 3 days** before your next dose is due, skip the dose and inject the next one on your regular scheduled day.

Do not use a double dose to make up for a forgotten dose.

You can also change the day of the week on which you inject Trulicity if necessary, as long as it has been at least 3 days since your last dose of Trulicity.

#### **If you stop using Trulicity**

Do not stop using Trulicity without talking with your doctor. If you stop using Trulicity, your blood sugar levels can increase.

If you have any further questions on the use of this medicine, ask your doctor, pharmacist or nurse.

## **4. Possible side effects**

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Very common side effects with dulaglutide that may affect more than 1 in 10 people using this medicine are:

- Nausea (feeling sick)
- Vomiting (being sick)
- Diarrhoea
- Abdominal (stomach) pain.

These side effects are usually not severe. They are most common when first starting dulaglutide but decrease over time in most patients.

Hypoglycaemia (low blood sugar) is very common when dulaglutide is used with medicines that contain metformin, a sulphonylurea and/or insulin. If you are taking a sulphonylurea or mealtime insulin, the dose may need to be lowered while you use dulaglutide.

Hypoglycaemia is common (may affect up to 1 in 10 people using this medicine) when dulaglutide is used alone or with both metformin and pioglitazone together.

Symptoms of low blood sugar may include headache, drowsiness, weakness, dizziness, feeling hungry, confusion, irritability, fast heartbeat and sweating. Your doctor should tell you how to treat low blood sugar.

Other common side effects:

- Feeling less hungry (decreased appetite)
- Indigestion
- Constipation
- Gas (flatulence)
- Bloating of the stomach
- Gastroesophageal reflux disease - a disease caused by stomach acid coming up into the tube from your stomach to your mouth
- Burping
- Feeling tired
- Increased heart rate
- Slowing of the electrical currents in the heart

Uncommon side effects (may affect up to 1 in 100 people using this medicine):

- Injection site reactions (e.g. rash or redness)

Rare side effects (may affect up to 1 in 1,000 people using this medicine):

- Inflamed pancreas (acute pancreatitis)

### **Reporting of side effects**

If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via [the national reporting system listed in Appendix V](#). By reporting side effects, you can help provide more information on the safety of this medicine.

## **5. How to store Trulicity**

Keep this medicine out of the sight and reach of children.

Do not use this medicine after the expiry date which is stated on the syringe label and on the carton after EXP.

The expiry date refers to the last day of that month.

Store in a refrigerator (2°C - 8°C). Do not freeze.

Store in the original packaging in order to protect from light.

Trulicity can be taken out of the fridge for up to 14 days at a temperature not above 30°C.

Do not use this medicine if you notice that the syringe is damaged, or the medicine is cloudy, discoloured or has particles in it.

Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

## **6. Contents of the pack and other information**

### **What Trulicity contains**

The active substance is dulaglutide.

- *Trulicity 0.75 mg*: Each pre-filled syringe contains 0.75 mg of dulaglutide in 0.5 ml solution.
- *Trulicity 1.5 mg*: Each pre-filled syringe contains 1.5 mg of dulaglutide in 0.5 ml solution.



The other ingredients are sodium citrate; citric acid, anhydrous; mannitol; polysorbate 80 and water for injections.

### **What Trulicity looks like and contents of the pack**

Trulicity is a clear, colourless, solution for injection (injection) in a pre-filled syringe.

Each pre-filled syringe contains 0.5 ml solution.

The pre-filled syringe is for single-use only.

Pack sizes of 4 or multipacks of 12 (3 packs of 4) pre-filled syringes. Not all pack sizes may be available in your country.

### **Marketing Authorisation Holder**

Eli Lilly Nederland B.V., Grootslag 1-5, NL-3991 RA Houten, The Netherlands.

### **Manufacturer**

Eli Lilly Italia S.p.A., Via Gramsci 731/733, 50019, Sesto Fiorentino, Firenze (FI), Italy

For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder:

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**This leaflet was last revised in**

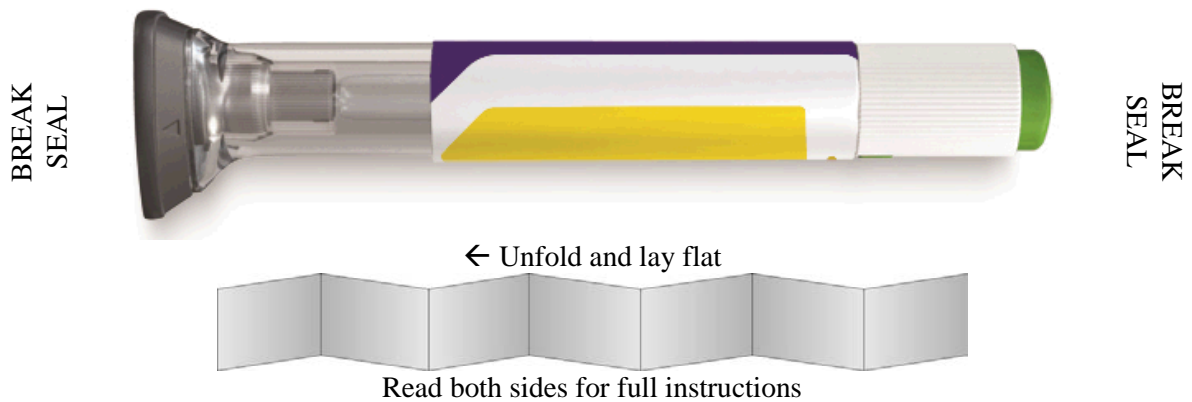
**Other sources of information**

Detailed information on this medicine is available on the European Medicines Agency web site:  
<http://www.ema.europa.eu>.

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## Instructions for use

### Trulicity 0.75 mg solution for injection in pre-filled pen dulaglutide



## ABOUT TRULICITY PRE-FILLED PEN

Please read these **Instructions for use** and the **Information for the patient** carefully and completely before using your pre-filled pen. Talk to your doctor, pharmacist or nurse about how to inject Trulicity correctly.

- The pen is a disposable, pre-filled delivery device that is ready to use. Each pen contains one weekly dose of Trulicity (0.75 mg). Each pen delivers one dose only.
- **Trulicity is administered once a week.** You may want to mark your calendar to remind you when to inject your next dose.
- When you press the green injection button, the pen will automatically insert the needle **into your skin**, inject the medicine, and pull back (retract) the needle **after the injection is complete**.

## BEFORE YOU GET STARTED

### Remove

from the refrigerator.  
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### Check

the label to make sure you have the correct medicine and it has not expired.

### Inspect

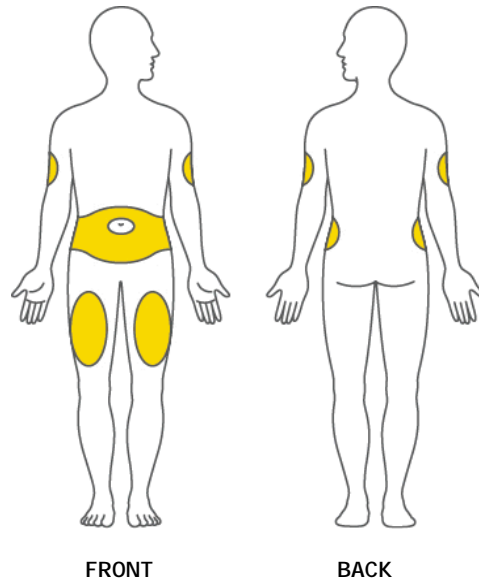
the pen. Do not use if you notice that the pen is damaged, or the medicine is cloudy, discoloured or has particles in it.

### Prepare

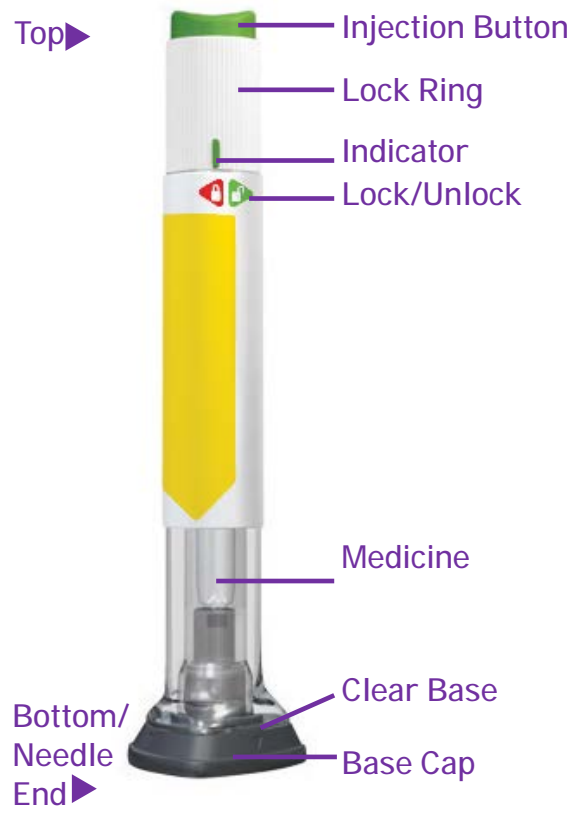
by washing your hands.

## CHOOSE YOUR INJECTION SITE


- Your doctor, pharmacist or nurse can help you choose the injection site that is best for you.
- You may inject the medicine into your stomach (abdomen) or thigh.
- Another person may give you the injection in your upper arm.
- Change (rotate) your injection site each week. You may use the same area of your body, but be sure to choose a different injection site in that area.



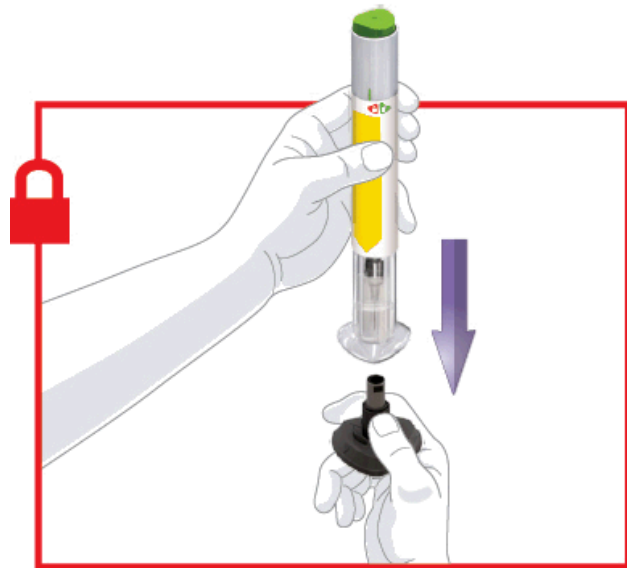
1. **UNCAP**
2. **PLACE AND UNLOCK**
3. **PRESS AND HOLD**



## 1 UNCAP


-  Make sure the pen is **locked**.
- Pull off and discard the grey base cap.

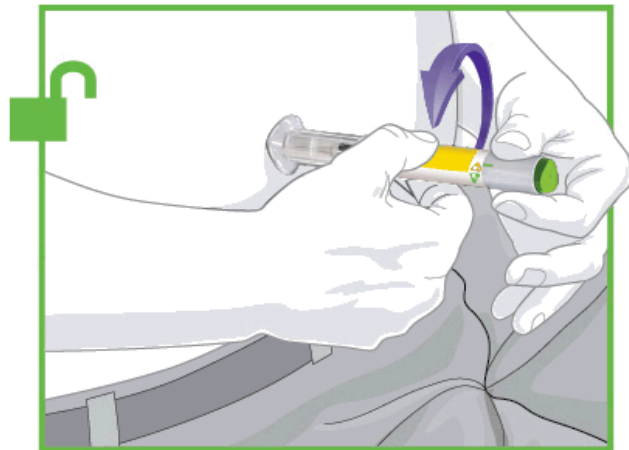
**Do not put the base cap back on – this could damage the needle. Do not touch the needle.**



## 2 PLACE AND UNLOCK


- Place the clear base flat and firmly against your skin at the injection site.

 **Unlock** by turning the lock ring.

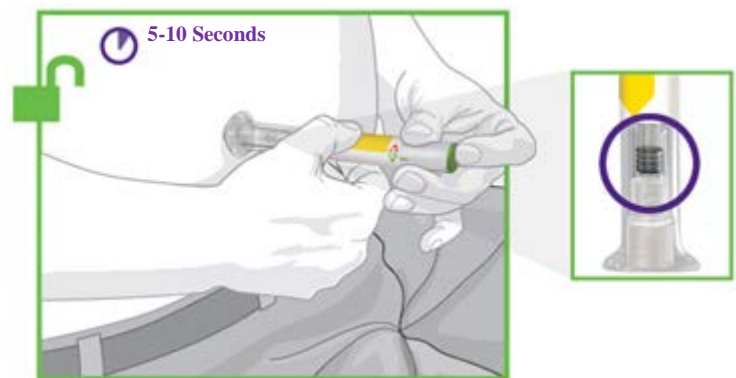


## 3 PRESS AND HOLD

- Press and hold the green injection button; you will hear a loud click.

 Continue holding the clear base firmly against your skin until you hear a second click. This occurs when the needle starts retracting in about 5-10 seconds.

- Remove the pen from your skin.
- **You will know your injection is complete when the grey part is visible.**



## IMPORTANT INFORMATION

Storage and Handling

Disposal of Pen

Commonly Asked Questions

Other Information

Where to Learn More

## STORAGE AND HANDLING

- The pen contains glass parts. Handle it carefully. If you drop it on a hard surface, do not use it. Use a new pen for your injection.
- Store your pen in the refrigerator.
- When refrigeration is not possible, you can keep your pen at room temperature (below 30°C) for up to a total of 14 days.
- Do not freeze your pen. If the pen has been frozen, **DO NOT USE**.
- Store the pen in the original package in order to protect from light.
- Keep the pen out of sight and reach of children.
- For complete information about proper storage, read the Information for the patient.

## DISPOSAL OF PEN

- Dispose of the pen in a sharps container or as directed by your doctor, pharmacist or nurse.
- Do not recycle the filled sharps container.
- Ask your doctor, pharmacist or nurse about how to dispose of medicines you no longer use.



## COMMONLY ASKED QUESTIONS

### What if I see an air bubble in my pen?

Air bubbles are normal. They will not harm you or affect your dose.

### What if I unlock the pen and press the green injection button before pulling off the base cap?

Do not remove the base cap and do not use the pen. Dispose of the pen as directed by your doctor, pharmacist or nurse. Inject your dose using another pen.

### What if there is a drop of liquid on the tip of the needle when I remove the base cap?

A drop of liquid on the tip of the needle is not unusual and will not affect your dose.

### Do I need to hold the injection button down until the injection is complete?

This is not necessary, but it may help you keep the pen steady and firm against your skin.

**I heard more than two clicks during my injection - two louder clicks and a soft one. Did I get my complete injection?**

Some patients may hear a soft click right before the second loud click. That is the normal operation of the pen. Do not remove the pen from your skin until you hear the second louder click.

**What if there is a drop of liquid or blood on my skin after my injection?**

This is not unusual and will not affect your dose.

**I'm not sure my pen worked correctly.**

Check to see if you have received your dose. Your dose was delivered correctly if the grey part is visible (see step 3.) Also contact your doctor, pharmacist or nurse for further instructions. Until then, store your pen safely to avoid an accidental needle stick injury.

**OTHER INFORMATION**

- If you have vision problems, DO NOT use your pen without help from a person trained to use the Trulicity pen.

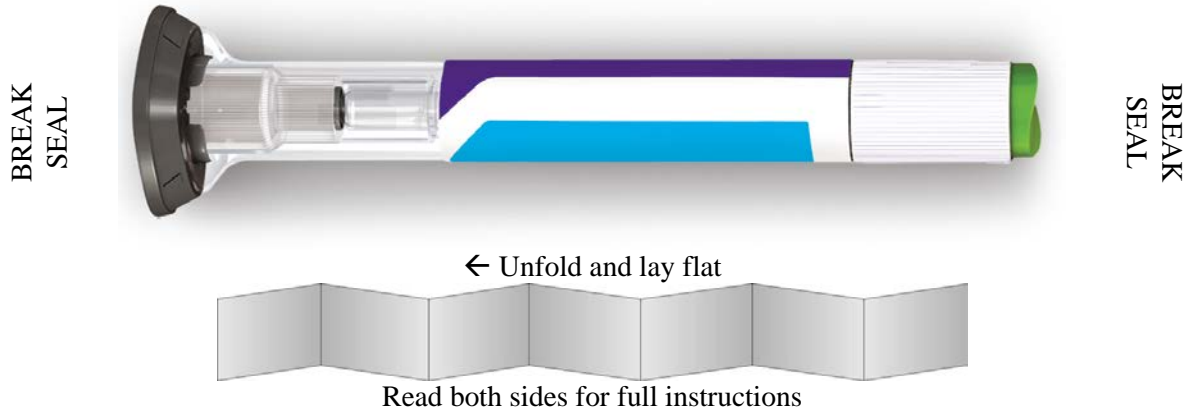
**WHERE TO LEARN MORE**

- If you have any questions or problems with your Trulicity pen, contact your doctor, pharmacist or nurse.



## Instructions for use

### Trulicity 1.5 mg solution for injection in pre-filled pen dulaglutide



#### ABOUT TRULICITY PRE-FILLED PEN

Please read these Instructions for use and the Information for the patient carefully and completely before using your pre-filled pen. Talk to your doctor, pharmacist or nurse about how to inject Trulicity correctly.

- The pen is a disposable, pre-filled delivery device that is ready to use. Each pen contains one weekly dose of Trulicity (1.5 mg). Each pen delivers one dose only.
- **Trulicity is administered once a week.** You may want to mark your calendar to remind you when to inject your next dose.
- When you press the green injection button, the pen will automatically insert the needle **into your skin**, inject the medicine, and pull back (retract) the needle **after the injection is complete**.

## BEFORE YOU GET STARTED

### Remove

from the refrigerator.

### Check

the label to make sure you have the correct medicine and it has not expired.

### Inspect

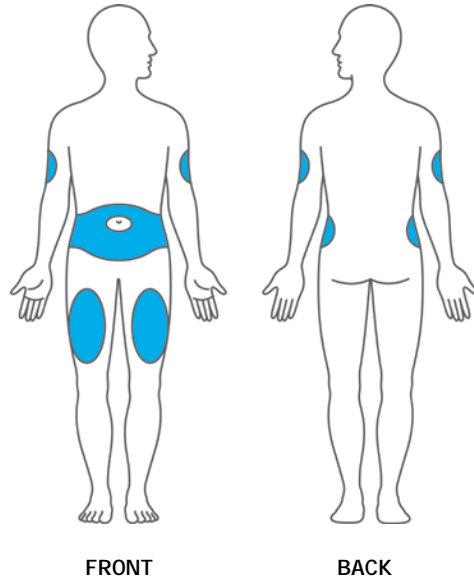
the pen. Do not use if you notice that the pen is damaged, or the medicine is cloudy, discoloured or has particles in it.

### Prepare

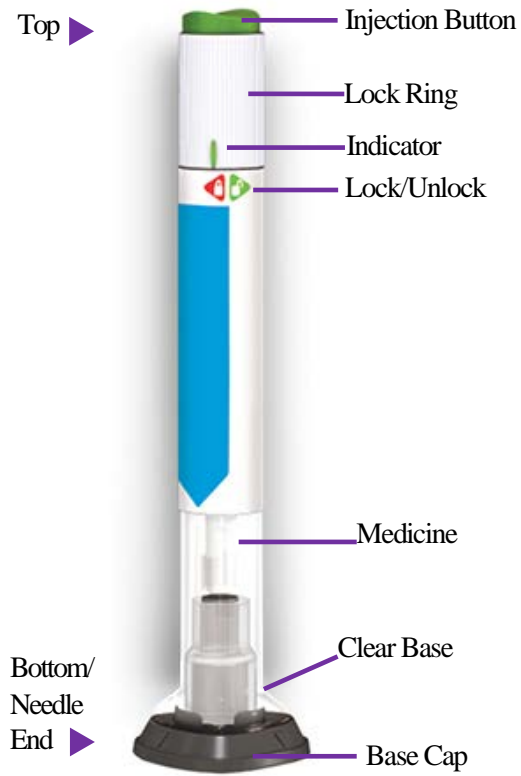
by washing your hands.

## CHOOSE YOUR INJECTION SITE


- Your doctor, pharmacist or nurse can help you choose the injection site that is best for you.
- You may inject the medicine into your stomach (abdomen) or thigh.
- Another person may give you the injection in your upper arm.
- Change (rotate) your injection site each week. You may use the same area of your body, but be sure to choose a different injection site in that area.



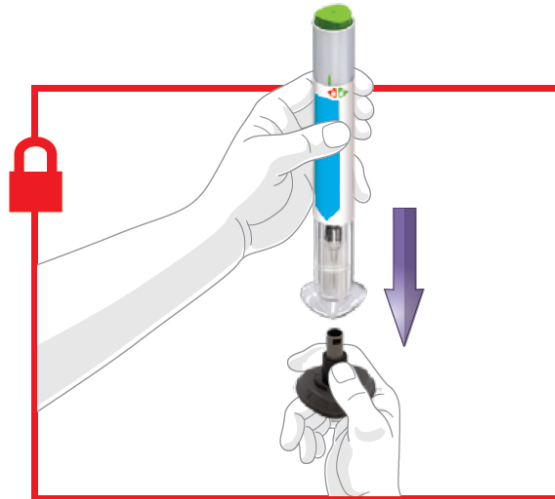
1. **UNCAP**
2. **PLACE AND UNLOCK**
3. **PRESS AND HOLD**




## 1 UNCAP

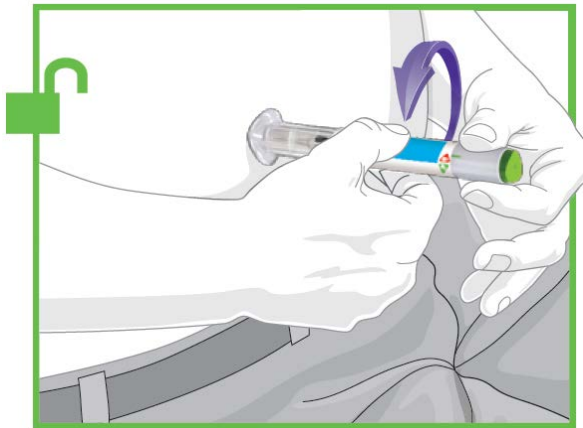
-  Make sure the pen is **locked**.
- Pull off and discard the grey base cap.

**Do not put the base cap back on – this could damage the needle. Do not touch the needle.**




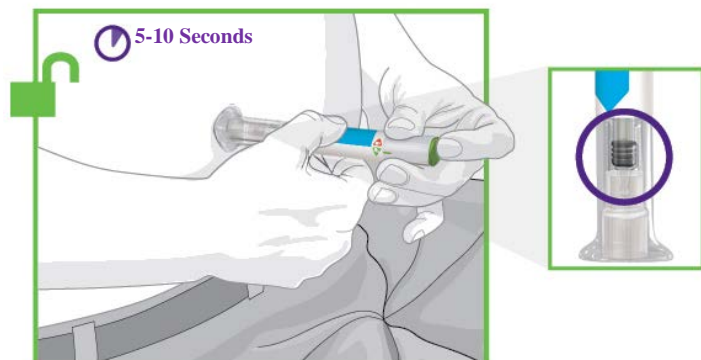
## 2 PLACE AND UNLOCK

- Place the clear base flat and firmly against your skin at the injection site.
-  **Unlock** by turning the lock ring.



## 3 PRESS AND HOLD

- Press and hold the green injection button; you will hear a loud click.
-  Continue holding the clear base firmly against your skin until you hear a second click. This occurs when the needle starts retracting in about 5-10 seconds.
- Remove the pen from your skin.
- **You will know your injection is complete when the grey part is visible.**



## IMPORTANT INFORMATION

Storage and Handling  
Disposal of Pen  
Commonly Asked Questions  
Other Information  
Where to Learn More

## STORAGE AND HANDLING

- The pen contains glass parts. Handle it carefully. If you drop it on a hard surface, do not use it. Use a new pen for your injection.
- Store your pen in the refrigerator.
- When refrigeration is not possible, you can keep your pen at room temperature (below 30°C) for up to a total of 14 days.
- Do not freeze your pen. If the pen has been frozen, **DO NOT USE**.
- Store the pen in the original package in order to protect from light.
- Keep the pen out of sight and reach of children.
- For complete information about proper storage, read the Information for the patient.

## DISPOSAL OF PEN

- Dispose of the pen in a sharps container or as directed by your doctor, pharmacist or nurse.
- Do not recycle the filled sharps container.
- Ask your doctor, pharmacist or nurse about how to dispose of medicines you no longer use.



## COMMONLY ASKED QUESTIONS

### What if I see an air bubble in my pen?

Air bubbles are normal. They will not harm you or affect your dose.

### What if I unlock the pen and press the green injection button before pulling off the base cap?

Do not remove the base cap and do not use the pen. Dispose of the pen as directed by your doctor, pharmacist or nurse. Inject your dose using another pen.

### What if there is a drop of liquid on the tip of the needle when I remove the base cap?

A drop of liquid on the tip of the needle is not unusual and will not affect your dose.

**Do I need to hold the injection button down until the injection is complete?**

This is not necessary, but it may help you keep the pen steady and firm against your skin.

**I heard more than two clicks during my injection - two louder clicks and a soft one. Did I get my complete injection?**

Some patients may hear a soft click right before the second loud click. That is the normal operation of the pen. Do not remove the pen from your skin until you hear the second louder click.

**What if there is a drop of liquid or blood on my skin after my injection?**

This is not unusual and will not affect your dose.

**I'm not sure my pen worked correctly.**

Check to see if you have received your dose. Your dose was delivered correctly if the grey part is visible (see step 3.) Also contact your doctor, pharmacist or nurse for further instructions. Until then, store your pen safely to avoid an accidental needle stick injury.

**OTHER INFORMATION**

- If you have vision problems, DO NOT use your pen without help from a person trained to use the Trulicity pen.

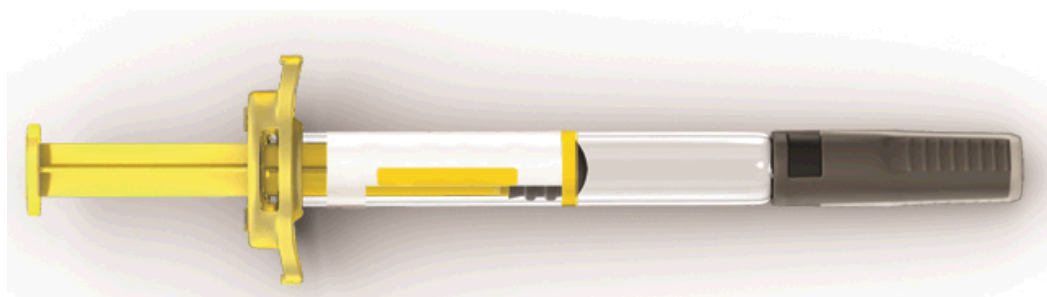
**WHERE TO LEARN MORE**

- If you have any questions or problems with your Trulicity pen, contact your doctor, pharmacist or nurse.

## Instructions for use

### Trulicity 0.75 mg solution for injection in pre-filled syringe

dulaglutide



#### ABOUT TRULICITY PRE-FILLED SYRINGE

Please read these Instructions for use and the Information for the patient carefully and completely before using your pre-filled syringe.

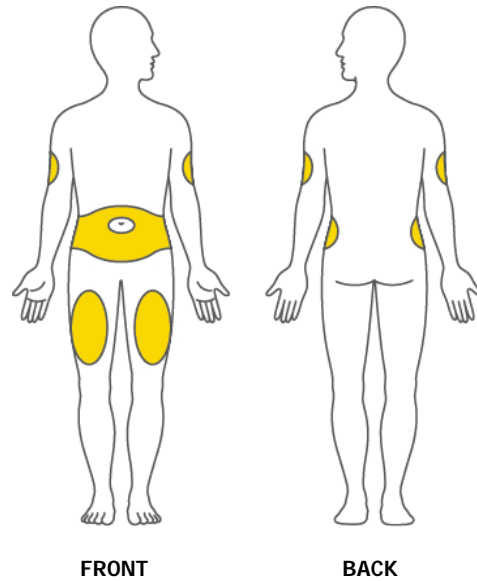
- The syringe is a disposable, pre-filled delivery device. Each syringe contains one weekly dose of Trulicity (0.75 mg). Each syringe delivers one dose only.
- **Trulicity is administered once a week.** You may want to mark your calendar to remind you when to inject your next dose.

#### BEFORE YOU GET STARTED

Remove	Check	Inspect	Prepare
from the refrigerator.	the label to make sure you have the correct medicine and it has not expired.	the syringe. Do not use if you notice that the syringe is damaged, or the medicine is cloudy, discoloured or has particles in it.	by washing your hands.

## CHOOSE YOUR INJECTION SITE

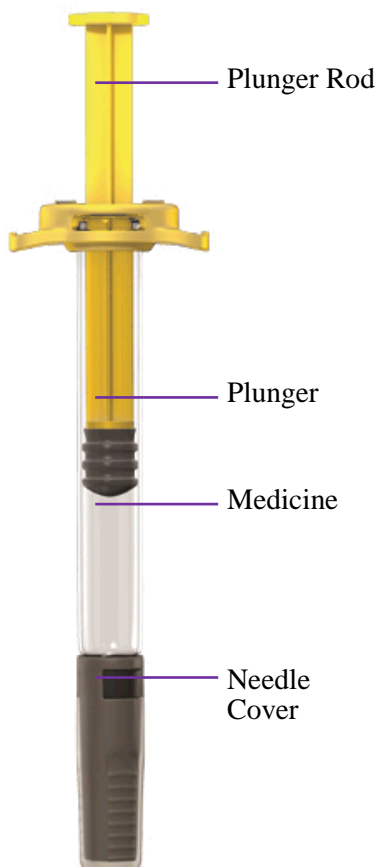
- Your doctor, pharmacist or nurse can help you choose the injection site that is best for you.
- You may inject the medicine into your stomach (abdomen) or thigh.
- Another person may give you the injection in your upper arm.
- Change (rotate) your injection site each week. You may use the same area of your body, but be sure to choose a different injection site in that area.



### 1. UNCAP

### 2. INSERT

### 3. INJECT

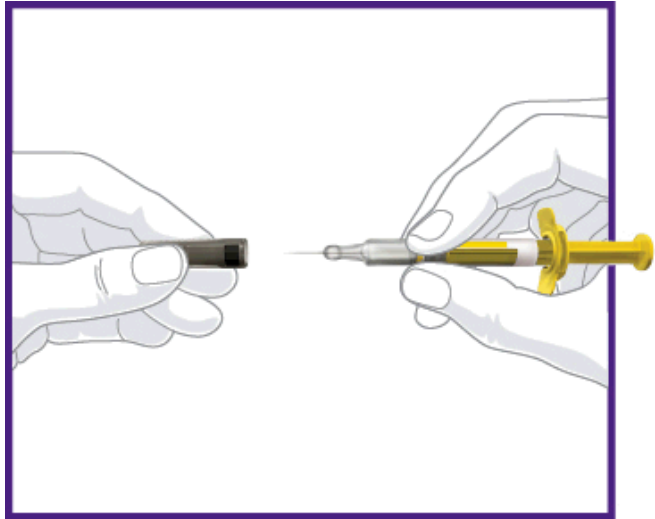




## 1 UNCAP

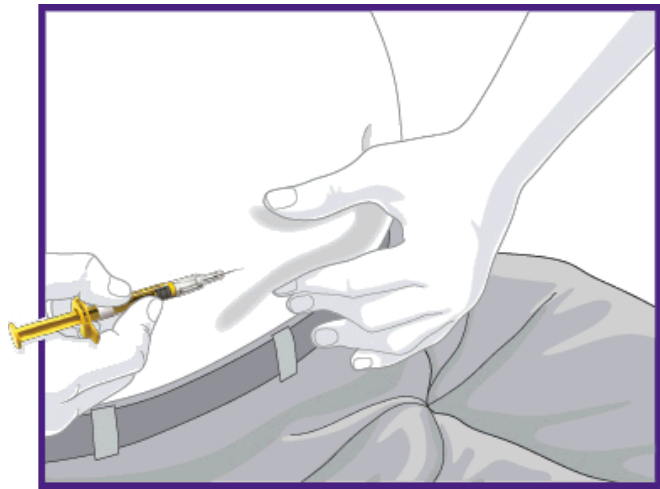
- Pull off and discard the needle cover.

**Do not touch the needle.**



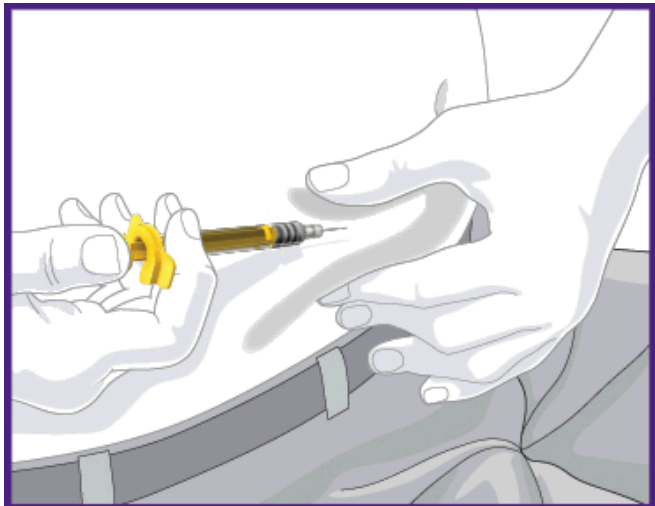
## 2 INSERT

- Gently grasp a fold of skin at the injection site.
- Insert the needle into your skin at about a **45-degree angle**.



## 3 INJECT

- Slowly push the plunger all the way in until all the medicine is injected.
- Remove the needle from your skin.
- Gently let go of the fold of skin.



## IMPORTANT INFORMATION

Storage and Handling  
Disposal of Syringe  
Commonly Asked Questions  
Other Information  
Where to Learn More

## STORAGE AND HANDLING

- Store your syringe in the refrigerator.
- When refrigeration is not possible, you can keep your syringe at room temperature (below 30°C) for up to a total of 14 days.
- Do not freeze your syringe. If the syringe has been frozen, **DO NOT USE**.
- Keep the syringe out of sight and reach of children.
- Store the syringe in the original package in order to protect from light.

For complete information about proper storage, read the Information for the patient.

## DISPOSAL OF SYRINGE

- Do not put the needle cover back on – this may result in an accidental needle stick injury to your hand.
- Dispose of the syringe in a sharps container or as directed by your doctor, pharmacist or nurse
- Do not recycle the filled sharps container.
- Ask your doctor, pharmacist or nurse about how to dispose of medicines you no longer use.
- The directions regarding syringe handling and disposal are not intended to replace local or institutional policies.



## COMMONLY ASKED QUESTIONS

### What if the needle looks bent?

- Do not use your syringe.
- Do not touch the needle.
- Dispose of the syringe as directed.
- Inject your dose using another syringe.

### What if I see an air bubble in my Syringe?

Air bubbles are normal. They will not harm you or affect your dose.

### I don't know how to do a subcutaneous injection.

You should receive training from your doctor, pharmacist or nurse on the right way to prepare and inject your medicine. Gently grasp a fold of skin at the injection site. With your other hand, hold the syringe like a pencil. Insert the needle into your skin at about a 45-degree angle. Slowly push the plunger all the way in until all the medicine is injected. Remove the needle from the skin. Gently release the skin.

**What if there is a drop of liquid on the tip of the needle when I remove the needle cover?**

Drops of liquid on the tip of the needle are not unusual and will not affect your dose.

**What if I cannot push in the plunger?**

- Do not continue to use your syringe.
- Remove the needle from your skin.
- Dispose of the syringe as directed.
- Inject your dose using another syringe.

**How can I tell if I have completed my injection?**

When your injection is complete, the plunger should be pushed fully into the syringe, with no more medicine left in it.

**What if there is a drop of liquid or blood on my skin after my injection?**

This is not unusual and will not affect your dose.

**OTHER INFORMATION**

- If you have vision problems, DO NOT use your syringe without help from a person trained to use the Trulicity syringe.
- Do not share your syringe with anyone else. You may give them an infection or get an infection from them.

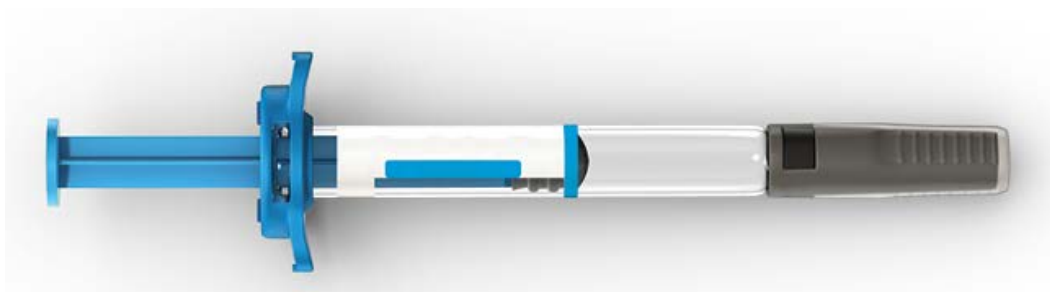
**WHERE TO LEARN MORE**

- If you have any questions or problems with your Trulicity syringe, contact your doctor, pharmacist or nurse.

## Instructions for use

### Trulicity 1.5 mg solution for injection in pre-filled syringe

dulaglutide



#### ABOUT TRULICITY PRE-FILLED SYRINGE

Please read these Instructions for use and the Information for the patient carefully and completely before using your pre-filled syringe.

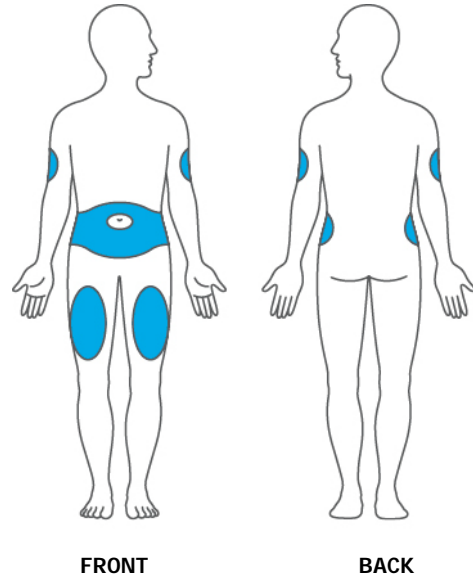
- The syringe is a disposable, pre-filled delivery device. Each syringe contains one weekly dose of Trulicity (1.5 mg). Each syringe delivers once dose only.
- **Trulicity is administered once a week.** You may want to mark your calendar to remind you when to inject your next dose.

#### BEFORE YOU GET STARTED

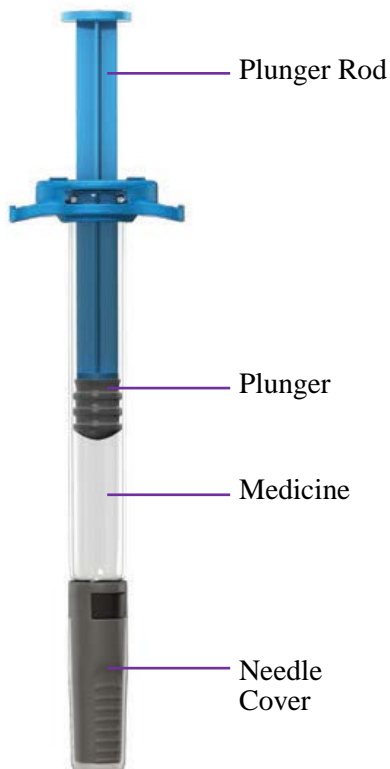
Remove	Check	Inspect	Prepare
from the refrigerator.	the label to make sure you have the correct medicine and it has not expired.	the syringe. Do not use if you notice that the syringe is damaged, or the medicine is cloudy, discoloured or has particles in it.	by washing your hands.

## CHOOSE YOUR INJECTION SITE

- Your doctor, pharmacist or nurse can help you choose the injection site that is best for you.
- You may inject the medicine into your stomach (abdomen) or thigh.
- Another person may give you the injection in your upper arm.
- Change (rotate) your injection site each week. You may use the same area of your body, but be sure to choose a different injection site in that area.



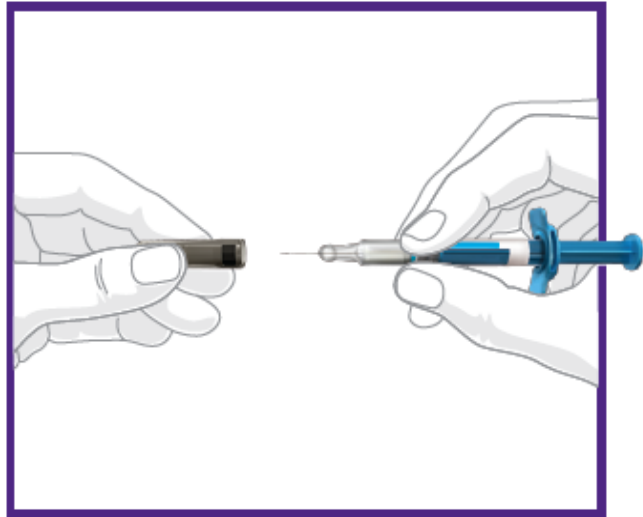
1. UNCAP
2. INSERT
3. INJECT



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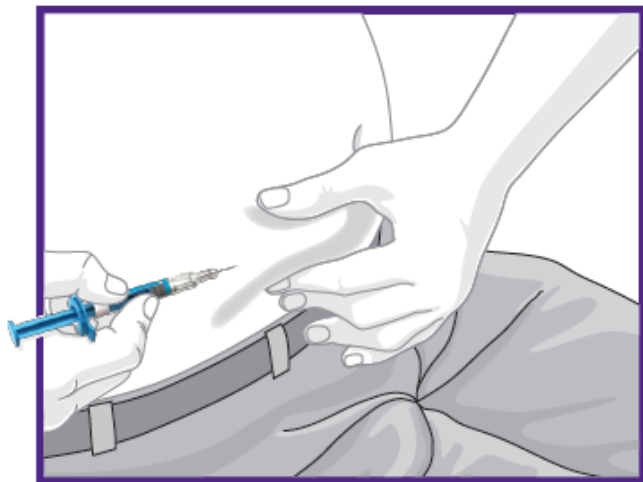
- Pull off and discard the needle cover.

**Do not touch the needle.**



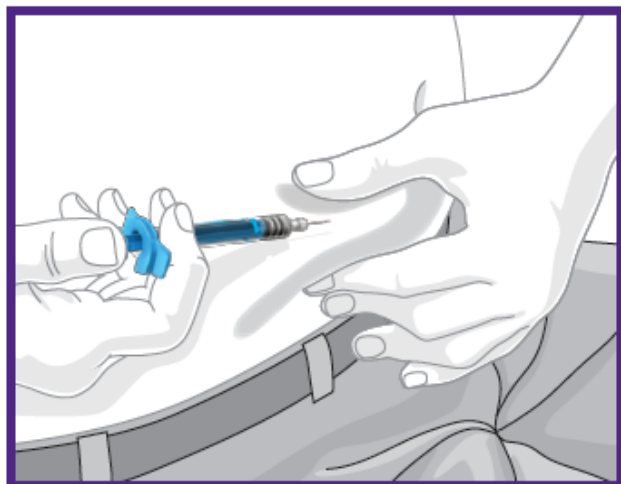
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- Remove the needle from your skin.
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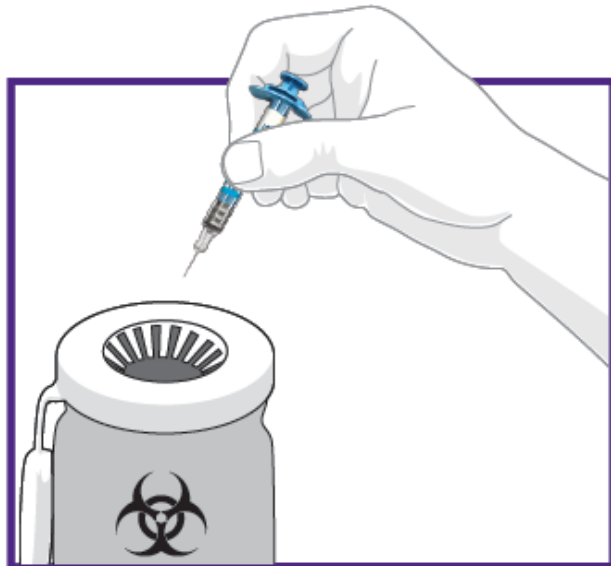
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