

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

Entresto 24 mg/26 mg film-coated tablets
Entresto 49 mg/51 mg film-coated tablets
Entresto 97 mg/103 mg film-coated tablets

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Entresto 24 mg/26 mg film-coated tablets

Each film-coated tablet contains 24.3 mg sacubitril and 25.7 mg valsartan (as sacubitril valsartan sodium salt complex).

Entresto 49 mg/51 mg film-coated tablets

Each film-coated tablet contains 48.6 mg sacubitril and 51.4 mg valsartan (as sacubitril valsartan sodium salt complex).

Entresto 97 mg/103 mg film-coated tablets

Each film-coated tablet contains 97.2 mg sacubitril and 102.8 mg valsartan (as sacubitril valsartan sodium salt complex).

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Film-coated tablet (tablet)

Entresto 24 mg/26 mg film-coated tablets

Violet white ovaloid biconvex film-coated tablet with bevelled edges, unscored, debossed with “NVR” on one side and “LZ” on the other side. Approximate tablet dimensions 13.1 mm x 5.2 mm.

Entresto 49 mg/51 mg film-coated tablets

Pale yellow ovaloid biconvex film-coated tablet with bevelled edges, unscored, debossed with “NVR” on one side and “L1” on the other side. Approximate tablet dimensions 13.1 mm x 5.2 mm.

Entresto 97 mg/103 mg film-coated tablets

Light pink ovaloid biconvex film-coated tablet with bevelled edges, unscored, debossed with “NVR” on one side and “L11” on the other side. Approximate tablet dimensions 15.1 mm x 6.0 mm.

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Entresto is indicated in adult patients for treatment of symptomatic chronic heart failure with reduced ejection fraction (see section 5.1).

4.2 Posology and method of administration

Posology

The recommended starting dose of Entresto is one tablet of 49 mg/51 mg twice daily, except in the situations described below. The dose should be doubled at 2-4 weeks to the target dose of one tablet of 97 mg/103 mg twice daily, as tolerated by the patient (see section 5.1).

If patients experience tolerability issues (systolic blood pressure [SBP] \leq 95 mmHg, symptomatic hypotension, hyperkalaemia, renal dysfunction), adjustment of concomitant medicinal products, temporary down-titration or discontinuation of Entresto is recommended (see section 4.4).

In PARADIGM-HF study, Entresto was administered in conjunction with other heart failure therapies, in place of an ACE inhibitor or other angiotensin II receptor blocker (ARB) (see section 5.1). There is limited experience in patients not currently taking an ACE inhibitor or an ARB or taking low doses of these medicinal products, therefore a starting dose of 24 mg/26 mg twice daily and slow dose titration (doubling every 3-4 weeks) are recommended in these patients (see “Titration” in section 5.1).

Treatment should not be initiated in patients with serum potassium level $>$ 5.4 mmol/l or with SBP $<$ 100 mmHg (see section 4.4). A starting dose of 24 mg/26 mg twice daily should be considered for patients with SBP \geq 100 to 110 mmHg.

Entresto should not be co-administered with an ACE inhibitor or an ARB. Due to the potential risk of angioedema when used concomitantly with an ACE inhibitor, it must not be started for at least 36 hours after discontinuing ACE inhibitor therapy (see sections 4.3, 4.4 and 4.5).

The valsartan contained within Entresto is more bioavailable than the valsartan in other marketed tablet formulations (see section 5.2).

If a dose is missed, the patient should take the next dose at the scheduled time.

Special populations

Elderly population

The dose should be in line with the renal function of the elderly patient.

Renal impairment

No dose adjustment is required in patients with mild (Estimated Glomerular Filtration Rate [eGFR] 60-90 ml/min/1.73 m²) renal impairment. A starting dose of 24 mg/26 mg twice daily should be considered in patients with moderate renal impairment (eGFR 30-60 ml/min/1.73 m²). As there is very limited clinical experience in patients with severe renal impairment (eGFR $<$ 30 ml/min/1.73 m²) (see section 5.1) Entresto should be used with caution and a starting dose of 24 mg/26 mg twice daily is recommended. There is no experience in patients with end-stage renal disease and use of Entresto is not recommended.

Hepatic impairment

No dose adjustment is required when administering Entresto to patients with mild hepatic impairment (Child-Pugh A classification). There is limited clinical experience in patients with moderate hepatic impairment (Child-Pugh B classification) or with AST/ALT values more than twice the upper limit of the normal range. Entresto should be used with caution in these patients and the recommended starting dose is 24 mg/26 mg twice daily (see sections 4.4 and 5.2). Entresto is contraindicated in patients with severe hepatic impairment, biliary cirrhosis or cholestasis (Child-Pugh C classification) (see section 4.3).

Paediatric population

The safety and efficacy of Entresto in children and adolescents aged below 18 years have not been established. No data are available.

Method of administration

Oral use.

Entresto may be administered with or without food (see section 5.2). The tablets must be swallowed with a glass of water.

4.3 Contraindications

- Hypersensitivity to the active substances or to any of the excipients listed in section 6.1.
- Concomitant use with ACE inhibitors (see sections 4.4 and 4.5). Entresto must not be administered until 36 hours after discontinuing ACE inhibitor therapy.
- Known history of angioedema related to previous ACE inhibitor or ARB therapy (see section 4.4).
- Hereditary or idiopathic angioedema (see section 4.4).
- Concomitant use with aliskiren-containing medicinal products in patients with diabetes mellitus or in patients with renal impairment (eGFR <60 ml/min/1.73 m²) (see sections 4.4 and 4.5).
- Severe hepatic impairment, biliary cirrhosis and cholestasis (see section 4.2).
- Second and third trimester of pregnancy (see section 4.6).

4.4 Special warnings and precautions for use

Dual blockade of the renin-angiotensin-aldosterone system (RAAS)

- The combination of Entresto with an ACE inhibitor is contraindicated due to the increased risk of angioedema (see section 4.3). Entresto must not be initiated until 36 hours after taking the last dose of ACE inhibitor therapy. If treatment with Entresto is stopped, ACE inhibitor therapy must not be initiated until 36 hours after the last dose of Entresto (see sections 4.2, 4.3 and 4.5).
- The combination of Entresto with direct renin inhibitors such as aliskiren is not recommended (see section 4.5). The combination of Entresto with aliskiren-containing products is contraindicated in patients with diabetes mellitus or in patients with renal impairment (eGFR <60 ml/min/1.73 m²) (see sections 4.3 and 4.5).
- Entresto contains valsartan, and therefore should not be co-administered with another ARB containing product (see sections 4.2 and 4.5).

Hypotension

Treatment should not be initiated unless SBP is ≥ 100 mmHg. Patients with SBP <100 mmHg were not studied (see section 5.1). Cases of symptomatic hypotension have been reported in patients treated with Entresto during clinical studies (see section 4.8), especially in patients ≥ 65 years old, patients with renal disease and patients with low SBP (<112 mmHg). When initiating therapy or during dose titration with Entresto, blood pressure should be monitored routinely. If hypotension occurs, temporary down-titration or discontinuation of Entresto is recommended (see section 4.2). Dose adjustment of diuretics, concomitant antihypertensives and treatment of other causes of hypotension (e.g. hypovolaemia) should be considered. Symptomatic hypotension is more likely to occur if the patient has been volume-depleted, e.g. by diuretic therapy, dietary salt restriction, diarrhoea or vomiting. Sodium and/or volume depletion should be corrected before starting treatment with Entresto, however, such corrective action must be carefully weighed against the risk of volume overload.

Impaired renal function

Evaluation of patients with heart failure should always include assessment of renal function. Patients with mild and moderate renal impairment are more at risk of developing hypotension (see section 4.2). There is very limited clinical experience in patients with severe renal impairment (estimated GFR <30 ml/min/1.73m²) and these patients may be at greatest risk of hypotension (see section 4.2). There is no experience in patients with end-stage renal disease and use of Entresto is not recommended.

Worsening renal function

Use of Entresto may be associated with decreased renal function. The risk may be further increased by dehydration or concomitant use of non-steroidal anti-inflammatory agents (NSAIDs) (see section 4.5). Down-titration should be considered in patients who develop a clinically significant decrease in renal function.

Hyperkalaemia

Treatment should not be initiated if the serum potassium level is >5.4 mmol/l. Use of Entresto may be associated with an increased risk of hyperkalaemia, although hypokalaemia may also occur (see section 4.8). Monitoring of serum potassium is recommended, especially in patients who have risk factors such as renal impairment, diabetes mellitus or hypoaldosteronism or who are on a high potassium diet or on mineralocorticoid antagonists (see section 4.2). If patients experience clinically significant hyperkalaemia adjustment of concomitant medicinal products, or temporary down-titration or discontinuation is recommended. If serum potassium level is >5.4 mmol/l discontinuation should be considered.

Angioedema

Angioedema has been reported in patients treated with Entresto. If angioedema occurs, Entresto should be immediately discontinued and appropriate therapy and monitoring should be provided until complete and sustained resolution of signs and symptoms has occurred. It must not be re-administered. In cases of confirmed angioedema where swelling has been confined to the face and lips, the condition has generally resolved without treatment, although antihistamines have been useful in relieving symptoms.

Angioedema associated with laryngeal oedema may be fatal. Where there is involvement of the tongue, glottis or larynx likely to cause airway obstruction, appropriate therapy, e.g. adrenaline solution 1 mg/1 ml (0.3-0.5 ml), and/or measures necessary to ensure a patent airway, should be promptly administered.

Patients with a prior history of angioedema were not studied. As they may be at higher risk for angioedema, caution is recommended if Entresto is used in these patients. Entresto is contraindicated in patients with a known history of angioedema related to previous ACE inhibitor or ARB therapy or with hereditary or idiopathic angioedema (see section 4.3).

Black patients have an increased susceptibility to develop angioedema (see section 4.8).

Patients with renal artery stenosis

Entresto may increase blood urea and serum creatinine levels in patients with bilateral or unilateral renal artery stenosis. Caution is required in patients with renal artery stenosis and monitoring of renal function is recommended.

Patients with NYHA functional classification IV

Caution should be exercised when initiating Entresto in patients with NYHA functional classification IV due to limited clinical experience in this population.

B-type natriuretic peptide (BNP)

BNP is not a suitable biomarker of heart failure in patients treated with Entresto because it is a neprilysin substrate (see section 5.1).

Patients with hepatic impairment

There is limited clinical experience in patients with moderate hepatic impairment (Child-Pugh B classification) or with AST/ALT values more than twice the upper limit of the normal range. In these patients, exposure may be increased and safety is not established. Caution is therefore recommended when using it in these patients (see section 4.2 and 5.2). Entresto is contraindicated in patients with severe hepatic impairment, biliary cirrhosis or cholestasis (Child-Pugh C classification) (see section 4.3).

4.5 Interaction with other medicinal products and other forms of interaction

Interactions resulting in a contraindication

ACE inhibitors

The concomitant use of Entresto with ACE inhibitors is contraindicated, as the concomitant inhibition of neprilysin (NEP) and ACE may increase the risk of angioedema. Entresto must not be started until 36 hours after taking the last dose of ACE inhibitor therapy. ACE inhibitor therapy must not be started until 36 hours after the last dose of Entresto (see sections 4.2 and 4.3).

Aliskiren

The concomitant use of Entresto with aliskiren-containing products is contraindicated in patients with diabetes mellitus or in patients with renal impairment (eGFR <60 ml/min/1.73 m²) (see section 4.3). The combination of Entresto with direct renin inhibitors such as aliskiren is not recommended (see section 4.4). Combination of Entresto with aliskiren is potentially associated with a higher frequency of adverse events such as hypotension, hyperkalaemia and decreased renal function (including acute renal failure) (see sections 4.3 and 4.4).

Interactions resulting in concomitant use not being recommended

Entresto contains valsartan, and therefore should not be co-administered with another ARB containing product (see section 4.4).

Interactions requiring precautions

OATP1B1 and OATP1B3 substrates, e.g. statins

In vitro data indicate that sacubitril inhibits OATP1B1 and OATP1B3 transporters. Entresto may therefore increase the systemic exposure of OATP1B1 and OATP1B3 substrates such as statins. Co-administration of Entresto increased the C_{max} of atorvastatin and its metabolites by up to 2-fold and AUC by up to 1.3-fold. Caution should be exercised when co-administering Entresto with statins. No clinically relevant drug-drug interaction was observed when simvastatin and Entresto were co-administered.

PDE5 inhibitors including sildenafil

Addition of a single dose of sildenafil to Entresto at steady state in patients with hypertension was associated with a significantly greater blood pressure reduction compared to administration of Entresto alone. Therefore, caution should be exercised when sildenafil or another PDE5 inhibitor is initiated in patients treated with Entresto.

Potassium

Concomitant use of potassium-sparing diuretics (triamterene, amiloride), mineralocorticoid antagonists (e.g. spironolactone, eplerenone), potassium supplements, salt substitutes containing potassium or other agents (such as heparin) may lead to increases in serum potassium, and to increases in serum creatinine. Monitoring of serum potassium is recommended if Entresto is co-administered with these agents (see section 4.4).

Non-steroidal anti-inflammatory agents (NSAIDs), including selective cyclooxygenase-2 (COX-2) inhibitors

In elderly patients, volume-depleted patients (including those on diuretic therapy), or patients with compromised renal function, concomitant use of Entresto and NSAIDs may lead to an increased risk of worsening of renal function. Therefore, monitoring of renal function is recommended when initiating or modifying treatment in patients on Entresto who are taking NSAIDs concomitantly (see section 4.4).

Lithium

Reversible increases in serum lithium concentrations and toxicity have been reported during concomitant administration of lithium with ACE inhibitors or angiotensin II receptor antagonists. Interactions between Entresto and lithium have not been investigated. Therefore, this combination is not recommended. If the combination proves necessary, careful monitoring of serum lithium levels is recommended. If a diuretic is also used, the risk of lithium toxicity may be increased further.

Furosemide

Co-administration of Entresto and furosemide had no effect on the pharmacokinetics of Entresto but reduced C_{max} and AUC of furosemide by 50% and 28%, respectively. While there was no relevant change in urine volume, the urinary excretion of sodium was reduced within 4 hours and 24 hours after co-administration. The average daily dose of furosemide was unchanged from baseline until the end of the PARADIGM-HF study in patients treated with Entresto.

Nitrates, e.g. nitroglycerine

There was no drug-drug interaction between Entresto and intravenously administered nitroglycerin with regard to blood pressure reduction. Co-administration of nitroglycerin and Entresto was associated with a treatment difference of 5 bpm in heart rate compared to the administration of nitroglycerine alone. A similar effect on the heart rate may occur when Entresto is co-administered with sublingual, oral or transdermal nitrates. In general no dose adjustment is required.

OATP and MRP2 transporters

The active metabolite of sacubitril (LBQ657) and valsartan are OATP1B1, OATP1B3, OAT1 and OAT3 substrates; valsartan is also a MRP2 substrate. Therefore, co-administration of Entresto with inhibitors of OATP1B1, OATP1B3, OAT3 (e.g. rifampicin, ciclosporin), OAT1 (e.g. tenofovir, cidofovir) or MRP2 (e.g. ritonavir) may increase the systemic exposure of LBQ657 or valsartan. Appropriate care should be exercised when initiating or ending concomitant treatment with such medicinal products.

Metformin

Co-administration of Entresto with metformin reduced both C_{max} and AUC of metformin by 23%. The clinical relevance of these findings is unknown. Therefore, when initiating therapy with Entresto in patients receiving metformin, the clinical status of the patient should be evaluated.

No significant interaction

No clinically meaningful drug-drug interaction was observed when Entresto was co-administered with digoxin, warfarin, hydrochlorothiazide, amlodipine, omeprazole, carvedilol or a combination of levonorgestrel/ethinyl estradiol.

CYP 450 interactions

In vitro metabolism studies indicate that potential for CYP 450-based drug interactions is low since there is limited metabolism of Entresto via CYP450 enzymes. Entresto does not induce or inhibit CYP450 enzymes.

4.6 Fertility, pregnancy and lactation

Pregnancy

The use of Entresto is not recommended during the first trimester of pregnancy and is contraindicated during the second and third trimesters of pregnancy (see section 4.3).

Valsartan

Epidemiological evidence regarding the risk of teratogenicity following exposure to ACE inhibitors during the first trimester of pregnancy has not been conclusive; however, a small increase in risk cannot be excluded. Whilst there is no controlled epidemiological data on the risk with ARBs, similar risks may exist for this class of medicinal product. Unless continued ARB therapy is considered essential, patients planning pregnancy should be changed to alternative antihypertensive treatments which have an established safety profile for use in pregnancy. When pregnancy is diagnosed, treatment with ARBs should be stopped immediately and, if appropriate, alternative therapy should be started. Exposure to ARBs therapy during the second and third trimesters is known to induce human foetotoxicity (decreased renal function, oligohydramnios, skull ossification retardation) and neonatal toxicity (renal failure, hypotension, hyperkalaemia).

Should exposure to ARBs have occurred from the second trimester of pregnancy, ultrasound check of renal function and skull is recommended. Infants whose mothers have taken ARBs should be closely observed for hypotension (see section 4.3).

Sacubitril

There are no data from the use of sacubitril in pregnant women. Studies in animals have shown reproductive toxicity (see section 5.3).

Entresto

There are no data from the use of Entresto in pregnant women. Animal studies with Entresto have shown reproductive toxicity (see section 5.3).

Breast-feeding

It is not known whether Entresto is excreted in human milk. The components of Entresto, sacubitril and valsartan, were excreted in the milk of lactating rats (see section 5.3). Because of the potential risk for adverse reactions in breast-fed newborns/infants, it is not recommended during breast-feeding. A decision should be made whether to abstain from breast-feeding or to discontinue Entresto while breast-feeding, taking into account the importance of Entresto to the mother.

Fertility

There are no available data on the effect of Entresto on human fertility. No impairment of fertility was demonstrated in studies with it in male and female rats (see section 5.3).

4.7 Effects on ability to drive and use machines

Entresto has a minor influence on the ability to drive and use machines. When driving vehicles or operating machines it should be taken into account that occasionally dizziness or fatigue may occur.

4.8 Undesirable effects

Summary of the safety profile

The most commonly reported adverse reactions during treatment with Entresto were hypotension, hyperkalaemia and renal impairment (see section 4.4). Angioedema was reported in patients treated with Entresto (see description of selected adverse reactions).

The safety of Entresto in patients with chronic heart failure was evaluated in the pivotal phase 3 study PARADIGM-HF, which compared patients treated twice daily with Entresto 97 mg/103 mg (n=4,203) or enalapril 10 mg (n=4,229). Patients randomised to the Entresto group received treatment for a median duration of exposure of 24 months; 3,271 patients were treated for more than one year.

In the PARADIGM-HF study, subjects were previously treated with ACE inhibitors and/or ARBs and also had to successfully complete sequential enalapril and Entresto run-in periods (median drug exposure of 15 and 29 days, respectively) prior to the randomised double-blind period. During the enalapril run-in period, 1,102 patients (10.5%) permanently discontinued from the study, 5.6% because of an adverse reaction, most commonly renal dysfunction (1.7%), hyperkalemia (1.7%) and hypotension (1.4%). During the Entresto run-in period, 10.4% of patients permanently discontinued, 5.9% because of an adverse reaction, most commonly renal dysfunction (1.8%), hypotension (1.7%) and hyperkalemia (1.3%). Due to discontinuations during the run-in period, the adverse reaction rates as presented in table below may be lower than the adverse reaction rates expected in clinical practice.

Discontinuation of therapy due to an adverse reaction in the double-blind period of the PARADIGM-HF study occurred in 450 Entresto-treated patients (10.7%) and 516 enalapril-treated patients (12.2%).

Tabulated list of adverse reactions

Adverse reactions are ranked by System organ class and then by frequency with the most frequent first, using the following convention: 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 ($< 1/10,000$). Within each frequency grouping, adverse reactions are ranked in order of decreasing seriousness.

Table 1 List of adverse reactions

System Organ Class	Preferred term	Frequency category
Blood and lymphatic system disorders	Anaemia	Common
Immune system disorders	Hypersensitivity	Uncommon
Metabolism and nutrition disorders	Hyperkalaemia*	Very common
	Hypokalaemia	Common
	Hypoglycaemia	Common
Nervous system disorders	Dizziness	Common
	Headache	Common
	Syncope	Common
	Dizziness postural	Uncommon
Ear and labyrinth disorders	Vertigo	Common
Vascular disorders	Hypotension*	Very common
	Orthostatic hypotension	Common
Respiratory, thoracic and mediastinal disorders	Cough	Common
Gastrointestinal disorders	Diarrhoea	Common
	Nausea	Common
	Gastritis	Common
Skin and subcutaneous tissue disorders	Pruritus	Uncommon
	Rash	Uncommon
	Angioedema*	Uncommon
Renal and urinary disorders	Renal impairment*	Very common
	Renal failure (renal failure, acute renal failure)	Common
General disorders and administration site conditions	Fatigue	Common
	Asthenia	Common

*See description of selected adverse reactions.

Description of selected adverse reactions

Angioedema

Angioedema has been reported in patients treated with Entresto. In PARADIGM-HF, angioedema was reported in 0.5% of patients treated with Entresto, compared with 0.2% of patients treated with enalapril. A higher incidence of angioedema was observed in Black patients treated with Entresto (2.4%) and enalapril (0.5%) (see section 4.4).

Hyperkalaemia and serum potassium

In PARADIGM-HF, hyperkalaemia and serum potassium concentrations > 5.4 mmol/l were reported in 11.6% and 19.7% of Entresto-treated patients and 14.0% and 21.1% of enalapril-treated patients, respectively.

Blood pressure

In PARADIGM-HF, hypotension and clinically relevant low systolic blood pressure (< 90 mmHg and decrease from baseline of > 20 mmHg) were reported in 17.6% and 4.76% of Entresto-treated patients compared with 11.9% and 2.67% of enalapril-treated patients, respectively.

Renal impairment

In PARADIGM-HF, renal impairment was reported in 10.1% of Entresto-treated patients and 11.5% of enalapril-treated patients.

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

Limited data are available with regard to overdose in humans. A single dose of Entresto 583 mg sacubitril/617 mg valsartan and multiple doses of 437 mg sacubitril/463 mg valsartan (14 days) were studied in healthy volunteers and were well tolerated.

Hypotension is the most likely symptom of overdose due to the blood pressure lowering effects of Entresto. Symptomatic treatment should be provided.

The medicinal product is unlikely to be removed by haemodialysis due to high protein binding.

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Agents acting on the renin-angiotensin system; angiotensin II antagonists, other combinations, ATC code: C09DX04

Mechanism of action

Entresto exhibits the mechanism of action of an angiotensin receptor neprilysin inhibitor by simultaneously inhibiting neprilysin (neutral endopeptidase; NEP) via LBQ657, the active metabolite of the prodrug sacubitril, and by blocking the angiotensin II type-1 (AT1) receptor via valsartan. The complementary cardiovascular benefits of Entresto in heart failure patients are attributed to the enhancement of peptides that are degraded by neprilysin, such as natriuretic peptides (NP), by LBQ657 and the simultaneous inhibition of the effects of angiotensin II by valsartan. NPs exert their effects by activating membrane-bound guanylyl cyclase-coupled receptors, resulting in increased concentrations of the second messenger cyclic guanosine monophosphate (cGMP), which could result in vasodilation, natriuresis and diuresis, increased glomerular filtration rate and renal blood flow, inhibition of renin and aldosterone release, reduction of sympathetic activity, and anti-hypertrophic and anti-fibrotic effects.

Valsartan inhibits detrimental cardiovascular and renal effects of angiotensin II by selectively blocking the AT1 receptor, and also inhibits angiotensin II-dependent aldosterone release. This prevents sustained activation of the renin-angiotensin-aldosterone system that would result in vasoconstriction, renal sodium and fluid retention, activation of cellular growth and proliferation, and subsequent maladaptive cardiovascular remodelling.

Pharmacodynamic effects

The pharmacodynamic effects of Entresto were evaluated after single and multiple dose administrations in healthy subjects and in patients with heart failure, and are consistent with simultaneous neprilysin inhibition and RAAS blockade. In a 7-day valsartan-controlled study in patients with reduced ejection fraction (HFrEF), administration of Entresto resulted in an initial increase in natriuresis, increased urine cGMP, and decreased plasma levels of mid-regional pro-atrial natriuretic peptide (MR-proANP) and N-terminal prohormone brain natriuretic peptide (NT-proBNP) compared to valsartan. In a 21-day study in HFrEF patients, Entresto significantly increased urine ANP and cGMP and plasma cGMP, and decreased plasma NT-proBNP, aldosterone and endothelin-1 compared to baseline. The AT1-receptor was also blocked as evidenced by increased plasma renin activity and plasma renin concentrations. In the PARADIGM-HF study, Entresto decreased plasma NT-proBNP and increased plasma BNP and urine cGMP compared with enalapril. BNP is not a suitable biomarker of heart failure in patients treated with Entresto because BNP is a neprilysin substrate (see section 4.4). NT-proBNP is not a neprilysin substrate and is therefore a more suitable biomarker.

In a thorough QTc clinical study in healthy male subjects, single doses of Entresto 194 mg sacubitril/206 mg valsartan and 583 mg sacubitril/617 mg valsartan had no effect on cardiac repolarisation.

Neprilysin is one of multiple enzymes involved in the clearance of amyloid- β (A β) from the brain and cerebrospinal fluid (CSF). Administration of Entresto 194 mg sacubitril/206 mg valsartan once daily for two weeks to healthy subjects was associated with an increase in CSF A β 1-38 compared to placebo; there were no changes in concentrations of CSF A β 1-40 and 1-42. The clinical relevance of this finding is not known (see section 5.3).

Clinical efficacy and safety

The 24 mg/26 mg, 49 mg/51 mg and 97 mg/103 mg strengths are in some publications referred to as 50, 100 or 200 mg.

PARADIGM-HF

PARADIGM-HF was a multinational, randomised, double-blind study of 8,442 patients comparing Entresto to enalapril, both given to adult patients with chronic heart failure, NYHA class II-IV and reduced ejection fraction (left ventricular ejection fraction [LVEF] \leq 40%, amended later to \leq 35%) in addition to other heart failure therapy. The primary endpoint was the composite of cardiovascular (CV) death or hospitalisation for heart failure (HF). Patients with SBP <100 mmHg, severe renal impairment (eGFR <30 ml/min/1.73 m²) and severe hepatic impairment were excluded at screening and therefore not prospectively studied.

Prior to study participation, patients were well treated with standard of care therapy which included ACE inhibitors/ARBs (>99%), beta blockers (94%), mineralocorticoid antagonists (58%) and diuretics (82%). The median follow-up duration was 27 months and patients were treated for up to 4.3 years.

Patients were required to discontinue their existing ACE inhibitor or ARB therapy and enter a sequential single-blind run-in period during which they received treatment with enalapril 10 mg twice daily, followed by single-blind treatment with Entresto 100 mg twice daily, increasing to 200 mg twice daily (see section 4.8 for discontinuations during this period). They were then randomised to the double-blind period of the study, during which they received either Entresto 200 mg or enalapril 10 mg twice daily [Entresto (n=4,209); enalapril (n=4,233)].

The mean age of the population studied was 64 years of age and 19% were 75 years of age or older. At randomisation, 70% of patients were NYHA class II, 24% were class III and 0.7% were class IV. The mean LVEF was 29% and there were 963 (11.4%) patients with a baseline LVEF >35% and \leq 40%.

In the Entresto group, 76% of patients remained on the target dose of 200 mg twice daily at the end of the study (mean daily dose of 375 mg). In the enalapril group, 75% of patients remained on the target dose of 10 mg twice daily at the end of the study (mean daily dose of 18.9 mg).

Entresto was superior to enalapril, reducing the risk of cardiovascular death or heart failure hospitalisations to 21.8% compared to 26.5% for enalapril treated patients. The absolute risk reductions were 4.7% for the composite of the CV death or HF hospitalisation, 3.1% for CV death alone, and 2.8% for first HF hospitalisation alone. The relative risk reduction was 20% versus enalapril (see Table 2). This effect was observed early and was sustained throughout the duration of the study (see Figure 1). Both components contributed to the risk reduction. Sudden death accounted for 45% of cardiovascular deaths and was reduced by 20% in Entresto-treated patients compared to enalapril-treated patients (HR 0.80, p=0.0082). Pump failure accounted for 26% of cardiovascular deaths and was reduced by 21% in Entresto-treated patients compared to enalapril-treated patients (HR 0.79, p=0.0338).

This risk reduction was consistently observed across subgroups including: gender, age, race, geography, NYHA class (II/III), ejection fraction, renal function, history of diabetes or hypertension, prior heart failure therapy, and atrial fibrillation.

Entresto improved survival with a significant reduction in all-cause mortality of 2.8% (Entresto, 17%, enalapril, 19.8%). The relative risk reduction was 16% compared with enalapril (see Table 2).

Table 2 Treatment effect for the primary composite endpoint, its components and all-cause mortality over a median follow-up of 27 months

	Entresto N=4187[#] n (%)	Enalapril N=4212[#] n (%)	Hazard ratio (95% CI)	Relative risk reduction	p-value ***
Primary composite endpoint of CV death and heart failure hospitalisations*	914 (21.83)	1117 (26.52)	0.80 (0.73, 0.87)	20%	0.000002
Individual components of the primary composite endpoint					
CV death**	558 (13.33)	693 (16.45)	0.80 (0.71, 0.89)	20%	0.00004
First heart failure hospitalisation	537 (12.83)	658 (15.62)	0.79 (0.71, 0.89)	21%	0.00004
Secondary endpoint					
All-cause mortality	711 (16.98)	835 (19.82)	0.84 (0.76, 0.93)	16%	0.0005

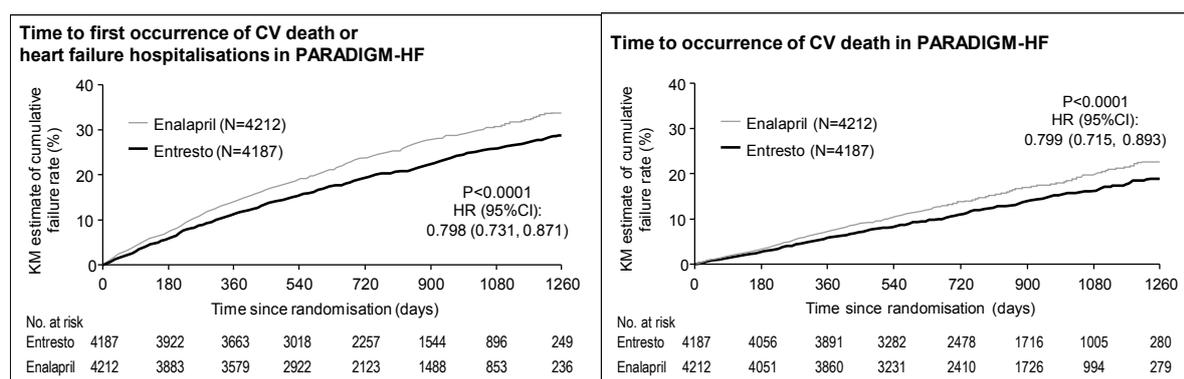
*The primary endpoint was defined as the time to first event of CV death or hospitalisation for HF.

**CV death includes all patients who died up to the cut-off date irrespective of previous hospitalisation.

***One-sided p-value

[#] Full analysis set

Figure 1 Kaplan-Meier curves for the primary composite endpoint and the CV death component



TITRATION

TITRATION was a 12-week safety and tolerability study in 538 patients with chronic heart failure (NYHA class II–IV) and systolic dysfunction (left ventricular ejection fraction $\leq 35\%$) naïve to ACE inhibitor or ARB therapy or on varying doses of ACE inhibitors or ARBs prior to study entry. Patients received a starting dose of Entresto of 50 mg twice daily and were up-titrated to 100 mg twice daily, then to the target dose of 200 mg twice daily, with either a 3-week or a 6-week regimen.

More patients who were naïve to previous ACE inhibitor or ARB therapy or on low-dose therapy (equivalent to <10 mg enalapril/day) were able to achieve and maintain Entresto 200 mg when up-titrated over 6 weeks (84.8%) versus 3 weeks (73.6%). Overall, 76% of patients achieved and maintained the target dose of Entresto 200 mg twice daily without any dose interruption or down-titration over 12 weeks.

Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies in one or more subsets of the paediatric population in the treatment of heart failure (see section 4.2 for information on paediatric use).

5.2 Pharmacokinetic properties

The valsartan contained within Entresto is more bioavailable than the valsartan in other marketed tablet formulations; 26 mg, 51 mg, and 103 mg of valsartan in Entresto is equivalent to 40 mg, 80 mg and 160 mg of valsartan in other marketed tablet formulations, respectively.

Absorption

Following oral administration, Entresto dissociates into valsartan and the prodrug sacubitril. Sacubitril is further metabolised to the active metabolite LBQ657. These reach peak plasma concentrations in 2 hours, 1 hour, and 2 hours, respectively. The oral absolute bioavailability of sacubitril and valsartan is estimated to be more than 60% and 23%, respectively.

Following twice daily dosing of Entresto, steady-state levels of sacubitril, LBQ657 and valsartan are reached in three days. At steady state, sacubitril and valsartan do not accumulate significantly, while LBQ657 accumulates 1.6-fold. Administration with food has no clinically significant impact on the systemic exposures of sacubitril, LBQ657 and valsartan. Entresto can be administered with or without food.

Distribution

Sacubitril, LBQ657 and valsartan are highly bound to plasma proteins (94-97%). Based on the comparison of plasma and CSF exposures, LBQ657 crosses the blood brain barrier to a limited extent (0.28%). The average apparent volume of distribution of valsartan and sacubitril were 75 litres to 103 litres, respectively.

Biotransformation

Sacubitril is readily converted to LBQ657 by carboxylesterases 1b and 1c; LBQ657 is not further metabolised to a significant extent. Valsartan is minimally metabolised, as only about 20% of the dose is recovered as metabolites. A hydroxyl metabolite of valsartan has been identified in plasma at low concentrations (<10%).

Since CYP450-enzyme-mediated metabolism of sacubitril and valsartan is minimal, co-administration with medicinal products that impact CYP450 enzymes is not expected to impact the pharmacokinetics.

Elimination

Following oral administration, 52-68% of sacubitril (primarily as LBQ657) and ~13% of valsartan and its metabolites are excreted in urine; 37-48% of sacubitril (primarily as LBQ657) and 86% of valsartan and its metabolites are excreted in faeces.

Sacubitril, LBQ657 and valsartan are eliminated from plasma with a mean elimination half-life ($T_{1/2}$) of approximately 1.43 hours, 11.48 hours, and 9.90 hours, respectively.

Linearity/non-linearity

The pharmacokinetics of sacubitril, LBQ657 and valsartan were approximately linear over an Entresto dose range of 24 mg sacubitril/26 mg valsartan to 97 mg sacubitril/103 mg valsartan.

Special populations

Elderly patients

LBQ657 and valsartan exposure are increased in subjects over 65 years of age by 42% and 30%, respectively, compared to younger subjects.

Impaired renal function

A correlation was observed between renal function and systemic exposure to LBQ657 in patients with mild to severe renal impairment. The exposure of LBQ657 in patients with moderate ($30 \text{ ml/min/1.73 m}^2 \leq \text{eGFR} < 60 \text{ ml/min/1.73 m}^2$) and severe renal impairment ($15 \text{ ml/min/1.73 m}^2 \leq \text{eGFR} < 30 \text{ ml/min/1.73 m}^2$) was 1.4-fold and 2.2-fold higher compared to patients with mild renal impairment ($60 \text{ ml/min/1.73 m}^2 \leq \text{eGFR} < 90 \text{ ml/min/1.73 m}^2$), the largest group of patients enrolled in PARADIGM-HF). The exposure of valsartan was similar in patients with moderate and severe renal impairment compared to patients with mild renal impairment. No studies have been performed in patients undergoing dialysis. However, LBQ657 and valsartan are highly bound to plasma protein and therefore unlikely to be effectively removed by dialysis.

Impaired hepatic function

In patients with mild to moderate hepatic impairment, the exposures of sacubitril increased by 1.5- and 3.4- fold, LBQ657 increased by 1.5- and 1.9-fold, and valsartan increased by 1.2-fold and 2.1-fold, respectively, compared to matching healthy subjects. However, in patients with mild to moderate hepatic impairment, the exposures of free concentrations of LBQ657 increased by 1.47- and 3.08-fold, respectively, and the exposures of free concentrations of valsartan increased by 1.09-fold and 2.20-fold, respectively, compared to matching healthy subjects. Entresto has not been studied in patients with severe hepatic impairment, biliary cirrhosis or cholestasis (see sections 4.3 and 4.4).

Effect of gender

The pharmacokinetics of Entresto (sacubitril, LBQ657 and valsartan) are similar between male and female subjects.

5.3 Preclinical safety data

Non-clinical data (including studies with sacubitril and valsartan components and/or Entresto) reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, genotoxicity, carcinogenic potential and fertility.

Fertility, reproduction and development

Entresto treatment during organogenesis resulted in increased embryofoetal lethality in rats at doses ≥ 49 mg sacubitril/51 mg valsartan/kg/day (≤ 0.72 -fold the maximum recommended human dose [MRHD] on the basis of AUC) and rabbits at doses ≥ 4.9 mg sacubitril/5.1 mg valsartan/kg/day (2-fold and 0.03-fold the MRHD on the basis of valsartan and LBQ657 AUC, respectively). It is teratogenic based on a low incidence of foetal hydrocephaly, associated with maternally toxic doses, which was observed in rabbits at an Entresto dose of ≥ 4.9 mg sacubitril/5.1 mg valsartan/kg/day. Cardiovascular abnormalities (mainly cardiomegaly) were observed in rabbit foetuses at a maternally non-toxic dose (1.46 mg sacubitril/1.54 mg valsartan/kg/day). A slight increase in two foetal skeletal variations (misshapen sternebra, sternebra bipartite ossification) was observed in rabbits at an Entresto dose of 4.9 mg sacubitril/5.1 mg valsartan/kg/day. The adverse embryofoetal effects of Entresto are attributed to the angiotensin receptor antagonist activity (see section 4.6).

Sacubitril treatment during organogenesis resulted in embryo-foetal lethality and embryo-foetal toxicity (decreased foetal body weights and skeletal malformations) in rabbits at doses associated with maternal toxicity (500 mg/kg/day; 5.7-fold the MRHD on the basis of LBQ657 AUC). A slight generalised delay in ossification was observed at doses of >50 mg/kg/day. This finding is not considered adverse. No evidence of embryo-foetal toxicity or teratogenicity was observed in rats treated with sacubitril. The embryo-foetal no-observed adverse effect level (NOAEL) for sacubitril was at least 750 mg/kg/day in rats and 200 mg/kg/day in rabbits (2.2-fold the MRHD on the basis of LBQ657 AUC).

Pre- and postnatal development studies in rats conducted with sacubitril at high doses up to 750 mg/kg/day (2.2-fold the MRHD on the basis of AUC) and valsartan at doses up to 600 mg/kg/day (0.86-fold the MRHD on the basis of AUC) indicate that treatment with Entresto during organogenesis, gestation and lactation may affect pup development and survival.

Other preclinical findings

Entresto

The effects of Entresto on amyloid- β concentrations in CSF and brain tissue were assessed in young (2-4 years old) cynomolgus monkeys treated with Entresto (24 mg sacubitril/26 mg valsartan/kg/day) for two weeks. In this study CSF A β clearance in cynomolgus monkeys was reduced, increasing CSF A β 1-40, 1-42 and 1-38 levels; there was no corresponding increase in A β levels in the brain. Increases in CSF A β 1-40 and 1-42 were not observed in a two-week healthy volunteer study in humans (see section 5.1). Additionally, in a toxicology study in cynomolgus monkeys treated with Entresto at 146 mg sacubitril/154 mg valsartan/kg/day for 39 weeks, there was no evidence for the presence of amyloid plaques in the brain. Amyloid content was not, however, measured quantitatively in this study.

Sacubitril

In juvenile rats treated with sacubitril (postnatal days 7 to 70), there was a reduction in age-related bone mass development and bone elongation. A study in adult rats showed only a minimal transient inhibitory effect on bone mineral density but not on any other parameters relevant for bone growth, suggesting no relevant effect of sacubitril on bone in adult patient populations under normal conditions. However, a mild transient interference of sacubitril with the early phase of fracture healing in adults cannot be excluded.

Valsartan

In juvenile rats treated with valsartan (postnatal days 7 to 70), doses as low as 1 mg/kg/day produced persistent irreversible kidney changes consisting of tubular nephropathy (sometimes accompanied by tubular epithelial necrosis) and pelvic dilatation. These kidney changes represent an expected exaggerated pharmacological effect of angiotensin converting enzyme inhibitors and angiotensin II type 1 blockers; such effects are observed if rats are treated during the first 13 days of life. This period coincides with 36 weeks of gestation in humans, which could occasionally extend up to 44 weeks after conception in humans.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Tablet core

Microcrystalline cellulose
Low-substituted hydroxypropylcellulose
Crospovidone, type A
Magnesium stearate
Talc
Colloidal anhydrous silica

Film coat

Entresto 24 mg/26 mg film-coated tablets
Hypromellose, substitution type 2910 (3 mPa·s)
Titanium dioxide (E171)
Macrogol 4000
Talc
Iron oxide red (E172)
Iron oxide black (E172)

Entresto 49 mg/51 mg film-coated tablets
Hypromellose, substitution type 2910 (3 mPa·s)
Titanium dioxide (E171)
Macrogol 4000
Talc
Iron oxide red (E172)
Iron oxide yellow (E172)

Entresto 97 mg/103 mg film-coated tablets
Hypromellose, substitution type 2910 (3 mPa·s)
Titanium dioxide (E171)
Macrogol 4000
Talc
Iron oxide red (E172)
Iron oxide black (E172)

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

30 months

6.4 Special precautions for storage

This medicinal product does not require any special temperature storage conditions. Store in the original package in order to protect from moisture.

6.5 Nature and contents of container

PVC/PVDC/Aluminium blisters. One blister contains either 10 or 14 film-coated tablets.

Entresto 24 mg/26 mg film-coated tablets

Pack sizes: 14, 20, 28 or 56 film-coated tablets.

Entresto 49 mg/51 mg film-coated tablets

Pack sizes: 14, 20, 28 or 56 film-coated tablets and multipacks containing 168 (3x56) or 196 (7x28) film-coated tablets.

Entresto 97 mg/103 mg film-coated tablets

Pack sizes: 14, 20, 28 or 56 film-coated tablets and multipacks containing 168 (3x56) or 196 (7x28) film-coated tablets.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal

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

7. MARKETING AUTHORISATION HOLDER

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

8. MARKETING AUTHORISATION NUMBER(S)

Entresto 24 mg/26 mg film-coated tablets

EU/1/15/1058/001

EU/1/15/1058/008-010

Entresto 49 mg/51 mg film-coated tablets

EU/1/15/1058/002-004

EU/1/15/1058/011-013

Entresto 97 mg/103 mg film-coated tablets

EU/1/15/1058/005-007

EU/1/15/1058/014-016

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

19 November 2015

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. 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. MANUFACTURER RESPONSIBLE FOR BATCH RELEASE

Name and address of the manufacturer responsible for batch release

Novartis Pharma GmbH
Roonstrasse 25
90429 Nuremberg
Germany

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 requirements for submission of periodic safety update reports for this medicinal product are set out in the list of Union reference dates (EURD list) provided for under Article 107c(7) of Directive 2001/83/EC and any subsequent updates published on the European medicines web-portal.

The marketing authorisation holder shall submit the first periodic safety update report for this product within 6 months following authorisation.

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.

ANNEX III
LABELLING AND PACKAGE LEAFLET

A. LABELLING

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

OUTER CARTON OF UNIT PACK

1. NAME OF THE MEDICINAL PRODUCT

Entresto 24 mg/26 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 24 mg/26 mg tablet contains 24.3 mg sacubitril and 25.7 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

14 film-coated tablets
20 film-coated tablets
28 film-coated tablets
56 film-coated tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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**

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/001	28 film-coated tablets
EU/1/15/1058/008	14 film-coated tablets
EU/1/15/1058/009	20 film-coated tablets
EU/1/15/1058/010	56 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Entresto 24 mg/26 mg

MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS

BLISTERS

1. NAME OF THE MEDICINAL PRODUCT

Entresto 24 mg/26 mg tablets
sacubitril/valsartan

2. NAME OF THE MARKETING AUTHORISATION HOLDER

Novartis Europharm Limited

3. EXPIRY DATE

EXP

4. BATCH NUMBER

Lot

5. OTHER

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

OUTER CARTON OF UNIT PACK

1. NAME OF THE MEDICINAL PRODUCT

Entresto 49 mg/51 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 49 mg/51 mg tablet contains 48.6 mg sacubitril and 51.4 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

14 film-coated tablets
20 film-coated tablets
28 film-coated tablets
56 film-coated tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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**

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/002	28 film-coated tablets
EU/1/15/1058/003	56 film-coated tablets
EU/1/15/1058/011	14 film-coated tablets
EU/1/15/1058/012	20 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Entresto 49 mg/51 mg

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

OUTER CARTON OF MULTIPACK (INCLUDING BLUE BOX)

1. NAME OF THE MEDICINAL PRODUCT

Entresto 49 mg/51 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 49 mg/51 mg tablet contains 48.6 mg sacubitril and 51.4 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

Multipack: 168 (3 packs of 56) film-coated tablets

Multipack: 196 (7 packs of 28) film-coated tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/004	168 film-coated tablets
EU/1/15/1058/013	196 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Entresto 49 mg/51 mg

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

INTERMEDIATE CARTON OF MULTIPACK (WITHOUT BLUE BOX)

1. NAME OF THE MEDICINAL PRODUCT

Entresto 49 mg/51 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 49 mg/51 mg tablet contains 48.6 mg sacubitril and 51.4 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

28 film-coated tablets. Component of a multipack. Not to be sold separately.
56 film-coated tablets. Component of a multipack. Not to be sold separately.

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/004	168 film-coated tablets
EU/1/15/1058/013	196 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Entresto 49 mg/51 mg

MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS

BLISTERS

1. NAME OF THE MEDICINAL PRODUCT

Entresto 49 mg/51 mg tablets
sacubitril/valsartan

2. NAME OF THE MARKETING AUTHORISATION HOLDER

Novartis Europharm Limited

3. EXPIRY DATE

EXP

4. BATCH NUMBER

Lot

5. OTHER

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

OUTER CARTON OF UNIT PACK

1. NAME OF THE MEDICINAL PRODUCT

Entresto 97 mg/103 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 97 mg/103 mg tablet contains 97.2 mg sacubitril and 102.8 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

14 film-coated tablets
20 film-coated tablets
28 film-coated tablets
56 film-coated tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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**

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/005	28 film-coated tablets
EU/1/15/1058/006	56 film-coated tablets
EU/1/15/1058/014	14 film-coated tablets
EU/1/15/1058/015	20 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Entresto 97 mg/103 mg

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

OUTER CARTON OF MULTIPACK (INCLUDING BLUE BOX)

1. NAME OF THE MEDICINAL PRODUCT

Entresto 97 mg/103 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 97 mg/103 mg tablet contains 97.2 mg sacubitril and 102.8 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

Multipack: 168 (3 packs of 56) film-coated tablets

Multipack: 196 (7 packs of 28) film-coated tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/007	168 film-coated tablets
EU/1/15/1058/016	196 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Entresto 97 mg/103 mg

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

INTERMEDIATE CARTON OF MULTIPACK (WITHOUT BLUE BOX)

1. NAME OF THE MEDICINAL PRODUCT

Entresto 97 mg/103 mg film-coated tablets
sacubitril/valsartan

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each 97 mg/103 mg tablet contains 97.2 mg sacubitril and 102.8 mg valsartan (as sacubitril valsartan sodium salt complex).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Film-coated tablet

28 film-coated tablets. Component of a multipack. Not to be sold separately.
56 film-coated tablets. Component of a multipack. Not to be sold separately.

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Read the package leaflet before use.
Oral 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 the original package in order to protect from moisture.

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

Novartis Europharm Limited
Frimley Business Park
Camberley GU16 7SR
United Kingdom

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/15/1058/007	168 film-coated tablets
EU/1/15/1058/016	196 film-coated tablets

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Entresto 97 mg/103 mg

MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS

BLISTERS

1. NAME OF THE MEDICINAL PRODUCT

Entresto 97 mg/103 mg tablets
sacubitril/valsartan

2. NAME OF THE MARKETING AUTHORISATION HOLDER

Novartis Europharm Limited

3. EXPIRY DATE

EXP

4. BATCH NUMBER

Lot

5. OTHER

B. PACKAGE LEAFLET

Package leaflet: Information for the patient

Entresto 24 mg/26 mg film-coated tablets
Entresto 49 mg/51 mg film-coated tablets
Entresto 97 mg/103 mg film-coated tablets
sacubitril/valsartan

▼ 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 or pharmacist. This includes any possible side effects not listed in this leaflet. See section 4.

What is in this leaflet

1. What Entresto is and what it is used for
2. What you need to know before you take Entresto
3. How to take Entresto
4. Possible side effects
5. How to store Entresto
6. Contents of the pack and other information

1. What Entresto is and what it is used for

Entresto is a medicine known as an angiotensin receptor neprilysin inhibitor. It dissociates into two active substances, sacubitril and valsartan.

Entresto is used to treat a type of long-term heart failure in adults.

This type of heart failure occurs when the heart is weak and cannot pump enough blood to the lungs and the rest of the body. The most common symptoms of heart failure are breathlessness, fatigue, tiredness and ankle swelling.

2. What you need to know before you take Entresto

Do not take Entresto:

- if you are allergic to sacubitril, valsartan or any of the other ingredients of this medicine (listed in section 6). If you think you may be allergic to any component of this medicine, talk to your doctor before taking Entresto.
- if you are taking another type of medicine called an angiotensin converting enzyme (ACE) inhibitor (for example enalapril, lisinopril or ramipril). ACE inhibitors are used to treat high blood pressure or heart failure. If you have been taking an ACE inhibitor, wait for 36 hours after taking the last dose before you start to take Entresto (see “Other medicines and Entresto”).
- if you or a member of your family have ever had a reaction called angioedema (swelling of the face, lips, tongue and/or throat, difficulties in breathing) when taking an ACE inhibitor or an angiotensin receptor blocker (ARB) (such as valsartan, telmisartan or irbesartan).
- if you have diabetes or impaired kidney function and you are being treated with a blood pressure lowering medicine containing aliskiren (see “Other medicines and Entresto”).

- if you have severe liver disease.
- if you are more than 3 months pregnant (it is also better to avoid this medicine in early pregnancy, see “Pregnancy and breastfeeding”).

If any of the above applies to you, do not take Entresto and talk to your doctor.

Warnings and precautions

Talk to your doctor, pharmacist or nurse before taking Entresto

- if you are being treated with an angiotensin receptor blocker (ARB) or aliskiren (see “Do not take Entresto”).
- if you have ever had angioedema (see “Do not take Entresto” and section 4 “Possible side effects”).
- if you have low blood pressure or are taking any other medicines that reduce your blood pressure (for example, a diuretic) or are suffering from vomiting or diarrhoea, especially if you are aged 65 years or more, or if you have kidney disease and low blood pressure.
- if you have severe kidney disease.
- if you are suffering from dehydration.
- if your kidney artery has narrowed.
- if you have liver disease.

Your doctor may check the amount of potassium in your blood at regular intervals during Entresto treatment.

If any of the above applies to you, tell your doctor, pharmacist or nurse before you take Entresto.

Children and adolescents

This medicine is not for use in children (aged below 18 years). This is because it has not been studied in this age group.

Other medicines and Entresto

Tell your doctor, pharmacist or nurse if you are taking, have recently taken or might take any other medicines. It may be necessary to change the dose, to take other precautions, or even to stop taking one of the medicines. This is particularly important for the following medicines:

- ACE inhibitors. Do not take Entresto with ACE inhibitors. If you have been taking an ACE inhibitor, wait 36 hours after taking the last dose of the ACE inhibitor before starting to take Entresto (see “Do not take Entresto”). If you stop taking Entresto, wait 36 hours after taking your last dose of Entresto before starting an ACE inhibitor.
- other medicines used to treat heart failure or lower blood pressure, such as angiotensin receptor blockers or aliskiren (see “Do not take Entresto”).
- some medicines known as statins that are used to lower high cholesterol levels (for example atorvastatin).
- sildenafil, a medicine used to treat erectile dysfunction or lung hypertension.
- medicines that increase the amount of potassium in the blood. These include potassium supplements, salt substitutes containing potassium, potassium-sparing medicines and heparin.
- painkillers of the type called non-steroidal anti-inflammatory medicines (NSAIDs) or selective cyclooxygenase-2 (Cox-2) inhibitors. If you are taking one of these, your doctor may want to check your kidney function when starting or adjusting treatment (see “Warnings and precautions”).
- lithium, a medicine used to treat some types of psychiatric illness.
- furosemide, a medicine belonging to the type known as diuretics, which are used to increase the amount of urine you produce.
- nitroglycerine, a medicine used to treat angina.
- some types of antibiotics (rifamycin group), ciclosporin (used to prevent rejection of transplanted organs) or antivirals such as ritonavir (used to treat HIV/AIDS).
- metformin, a medicine used to treat diabetes.

If any of the above applies to you, tell your doctor or pharmacist before you take Entresto.

Pregnancy and breastfeeding

Pregnancy

You must tell your doctor if you think that you are (or might become) pregnant. Your doctor will normally advise you to stop taking this medicine before you become pregnant or as soon as you know you are pregnant, and will advise you to take another medicine instead of Entresto. This medicine is not recommended in early pregnancy, and must not be taken when more than 3 months pregnant, as it may cause serious harm to your baby if it is used after the third month of pregnancy.

Breastfeeding

Entresto is not recommended for mothers who are breastfeeding. Tell your doctor if you are breastfeeding or about to start breastfeeding.

Driving and using machines

Before you drive a vehicle, use tools or operate machines, or carry out other activities that require concentration, make sure you know how Entresto affects you. If you feel dizzy or very tired while taking this medicine, do not drive a vehicle, cycle or use any tools or machines.

3. How to take Entresto

Always take this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure.

You will usually start by taking 24 mg/26 mg or 49 mg/51 mg twice a day (one tablet in the morning and one tablet in the evening). Your doctor will decide your exact starting dose based on which medicines you have been taking previously. Your doctor will then adjust the dose depending on how you respond to the treatment until the best dose for you is found.

The usual recommended target dose is 97 mg/103 mg twice a day (one tablet in the morning and one tablet in the evening).

Patients taking Entresto can develop low blood pressure (dizziness, light-headedness), a high level of potassium in the blood (which would be detected when your doctor performed a blood test) or decreased kidney function. If this happens, your doctor may reduce the dose of any other medicine you are taking, temporarily reduce your Entresto dose, or stop your Entresto treatment completely.

Swallow the tablets with a glass of water. You can take Entresto with or without food.

If you take more Entresto than you should

If you have accidentally taken too many Entresto tablets, or if someone else has taken your tablets, contact your doctor immediately. If you experience severe dizziness and/or fainting, tell your doctor as quickly as possible and lie down.

If you forget to take Entresto

It is advisable to take your medicine at the same time each day. However, if you forget to take a dose, you should simply take the next one at the scheduled time. Do not take a double dose to make up for a forgotten tablet.

If you stop taking Entresto

Stopping your treatment with Entresto may cause your condition to get worse. Do not stop taking your medicine unless your doctor tells you to.

If you have any further questions on the use of this medicine, ask your doctor or pharmacist.

4. Possible side effects

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Some side effects may be serious.

- Stop taking Entresto and seek immediate medical attention if you notice any swelling of the face, lips, tongue and/or throat, which may cause difficulties in breathing or swallowing. These may be signs of angioedema (an uncommon side effect which may affect up to 1 in 100 people).

Other possible side effects:

If any of the side effects listed below becomes severe, tell your doctor or pharmacist.

Very common (may affect more than 1 in 10 people):

- low blood pressure (dizziness, light-headedness)
- high level of potassium in the blood (shown in a blood test)
- decreased renal function (renal impairment)

Common (may affect up to 1 in 10 people):

- cough
- dizziness
- diarrhoea
- low level of red blood cells (shown in a blood test)
- tiredness
- (acute) renal failure (severe kidney disorder)
- low level of potassium in the blood (shown in a blood test)
- headache
- fainting
- weakness
- feeling sick (nausea)
- low blood pressure (dizziness, light-headedness) when switching from sitting or lying to standing position
- gastritis (stomach pain, nausea)
- spinning sensation
- low level of sugar in the blood (shown in a blood test)

Uncommon (may affect up to 1 in 100 people):

- allergic reaction with rash and itching
- dizziness when switching from sitting to standing position

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 Entresto

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 carton and blister after EXP. The expiry date refers to the last day of that month.

This medicine does not require any special temperature storage conditions.

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

Do not use any Entresto pack that is damaged or shows signs of tampering.

Do not throw away any medicines via wastewater. 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 Entresto contains

- The active substances are sacubitril and valsartan.
 - Each 24 mg/26 mg film-coated tablet contains 24.3 mg sacubitril and 25.7 mg valsartan (as sacubitril valsartan sodium salt complex).
 - Each 49 mg/51 mg film-coated tablet contains 48.6 mg sacubitril and 51.4 mg valsartan (as sacubitril valsartan sodium salt complex).
 - Each 97 mg/103 mg film-coated tablet contains 97.2 mg sacubitril and 102.8 mg valsartan (as sacubitril valsartan sodium salt complex).
- The other ingredients in the tablet core are microcrystalline cellulose, low-substituted hydroxypropylcellulose, crospovidone, magnesium stearate, talc and silica colloidal anhydrous.
- The 24 mg/26 mg and the 97 mg/103 mg tablet coatings contain hypromellose, titanium dioxide (E171), Macrogol 4000, talc, iron oxide red (E172) and iron oxide black (E172).
- The 49 mg/51 mg tablet coating contains hypromellose, titanium dioxide (E171), Macrogol 4000, talc, iron oxide red (E172) and iron oxide yellow (E172).

What Entresto looks like and contents of the pack

Entresto 24 mg/26 mg film-coated tablets are violet-white oval tablets with “NVR” on one side and “LZ” on the other side. Approximate tablet dimensions 13.1 mm x 5.2 mm.

Entresto 49 mg/51 mg film-coated tablets are pale yellow oval tablets with “NVR” on one side and “L1” on the other side. Approximate tablet dimensions 13.1 mm x 5.2 mm

Entresto 97 mg/103 mg film-coated tablets are light pink oval tablets with “NVR” on one side and “L11” on the other side. Approximate tablet dimensions 15.1 mm x 6.0 mm.

The tablets are supplied in PVC/PVDC/Aluminium blister packs of 14, 20, 28 or 56 tablets. The 49 mg/51 mg and 97 mg/103 mg tablets are also supplied in multipacks of 168 tablets (3 packs of 56 tablets) or 196 tablets (7 packs of 28 tablets).

Not all pack sizes may be marketed.

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Other sources of information

Detailed information on this medicine is available on the European Medicines Agency web site:
<http://www.ema.europa.eu>