

SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Abiraterone Zentiva 500mg Film-Coated Tablets

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each film-coated tablet contains 500 mg abiraterone acetate.

Excipients with known effect

Each film-coated tablet contains 240.54 mg lactose.

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Film-coated tablet.

Purple to brown oblong film-coated tablets, with dimensions 20×10 mm.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Abiraterone acetate is indicated with prednisone or prednisolone for:

- the treatment of newly diagnosed high-risk metastatic hormone sensitive prostate cancer (mHSPC) in adult men in combination with androgen deprivation therapy (ADT) (see section 5.1).
- the treatment of metastatic castration resistant prostate cancer (mCRPC) in adult men who are asymptomatic or mildly symptomatic after failure of ADT in whom chemotherapy is not yet clinically indicated (see section 5.1).
- the treatment of mCRPC in adult men whose disease has progressed on or after a docetaxel-based chemotherapy regimen.

4.2 Posology and method of administration

This medicinal product should be prescribed by an appropriate healthcare professional.

Posology

The recommended dose is 1,000 mg (2 × 500 mg tablet) as a single daily dose that must not be taken with food (see “Method of administration” below). Taking the tablets with food increases systemic exposure to abiraterone (see sections 4.5 and 5.2).

Dosage of prednisone or prednisolone

For mHSPC, Abiraterone acetate is used with 5 mg prednisone or prednisolone daily. For mCRPC, Abiraterone acetate is used with 10 mg prednisone or prednisolone daily.

Medical castration with luteinising hormone releasing hormone (LHRH) analogue should be continued during treatment in patients not surgically castrated.

Recommended monitoring

Serum transaminases should be measured prior to starting treatment, every 2 weeks for the first 3 months of treatment and monthly thereafter. Blood pressure, serum potassium and fluid retention should be monitored monthly. However, patients with a significant risk for congestive heart failure should be monitored every 2 weeks for the first 3 months of treatment and monthly thereafter (see section 4.4).

In patients with pre-existing hypokalaemia or those that develop hypokalaemia whilst being treated with Abiraterone acetate, consider maintaining the patient’s potassium level at ≥ 4.0 mM.

For patients who develop Grade ≥ 3 toxicities including hypertension, hypokalaemia, oedema and other non-mineralocorticoid toxicities, treatment should be withheld and appropriate medical management should be instituted. Treatment with Abiraterone acetate should not be reinitiated until symptoms of the toxicity have resolved to Grade 1 or baseline.

In the event of a missed daily dose of either Abiraterone acetate, prednisone or prednisolone, treatment should be resumed the following day with the usual daily dose.

Hepatotoxicity

For patients who develop hepatotoxicity during treatment (alanine aminotransferase [ALT] increases or aspartate aminotransferase [AST] increases above 5 times the upper limit of normal [ULN]), treatment should be withheld immediately (see section 4.4). Re-treatment following return of liver function tests to the patient’s baseline may be given at a reduced dose of 500

mg (1 tablet) once daily. For patients being re-treated, serum transaminases should be monitored at a minimum of every 2 weeks for 3 months and monthly thereafter. If hepatotoxicity recurs at the reduced dose of 500 mg daily, treatment should be discontinued.

If patients develop severe hepatotoxicity (alanine aminotransferase or aspartate aminotransferase $20\times$ ULN) anytime while on therapy, treatment should be discontinued and patients should not be re-treated.

Hepatic impairment

No dose adjustment is necessary for patients with pre-existing mild hepatic impairment, Child-Pugh Class A.

Moderate hepatic impairment (Child-Pugh Class B) has been shown to increase the systemic exposure to abiraterone by approximately 4-fold following single oral doses of abiraterone acetate 1,000 mg (see section 5.2). There are no data on the clinical safety and efficacy of multiple doses of abiraterone acetate when administered to patients with moderate or severe hepatic impairment (Child-Pugh Class B or C). No dose adjustment can be predicted. The use of Abiraterone acetate should be cautiously assessed in patients with moderate hepatic impairment, in whom the benefit clearly should outweigh the possible risk (see sections 4.2 and 5.2). Abiraterone acetate should not be used in patients with severe hepatic impairment (see sections 4.3, 4.4 and 5.2).

Renal impairment

No dose adjustment is necessary for patients with renal impairment (see section 5.2). However, there is no clinical experience in patients with prostate cancer and severe renal impairment. Caution is advised in these patients (see section 4.4).

Paediatric population

There is no relevant use of abiraterone acetate in the paediatric population.

Method of administration

Abiraterone Zentiva is for oral use.

The tablets should be taken at least 1 hour before or at least 2 hours after eating. These should be swallowed whole with water.

4.3 Contraindications

- Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.
- Women who are or may potentially be pregnant (see section 4.6).

- Severe hepatic impairment [Child-Pugh Class C (see sections 4.2, 4.4 and 5.2)].
- Abiraterone with prednisone or prednisolone is contraindicated in combination with Ra-223.

4.4 Special warnings and precautions for use

Hypertension, hypokalaemia, fluid retention and cardiac failure due to mineralocorticoid excess

Abiraterone acetate may cause hypertension, hypokalaemia and fluid retention (see section 4.8) as a consequence of increased mineralocorticoid levels resulting from CYP17 inhibition (see section 5.1). Co-administration of a corticosteroid suppresses adrenocorticotrophic hormone (ACTH) drive, resulting in a reduction in incidence and severity of these adverse reactions. Caution is required in treating patients whose underlying medical conditions might be compromised by increases in blood pressure, hypokalaemia (e.g. those on cardiac glycosides), or fluid retention (e.g. those with heart failure, severe or unstable angina pectoris, recent myocardial infarction or ventricular arrhythmia and those with severe renal impairment).

Abiraterone acetate should be used with caution in patients with a history of cardiovascular disease. The Phase 3 studies conducted with abiraterone acetate excluded patients with uncontrolled hypertension, clinically significant heart disease as evidenced by myocardial infarction, or arterial thrombotic events in the past 6 months, severe or unstable angina, or New York Heart Association Class (NYHA) III or IV heart failure (Study 301) or Class II–IV heart failure (studies 3011 and 302) or cardiac ejection fraction measurement of < 50%. In studies 3011 and 302, patients with atrial fibrillation, or other cardiac arrhythmia requiring medical therapy were excluded. Safety in patients with left ventricular ejection fraction (LVEF) < 50% or NYHA Class III or IV heart failure (in Study 301) or NYHA Class II–IV heart failure (in studies 3011 and 302) was not established (see sections 4.8 and 5.1).

Before treating patients with a significant risk for congestive heart failure (e.g. a history of cardiac failure, uncontrolled hypertension, or cardiac events such as ischaemic heart disease), consider obtaining an assessment of cardiac function (e.g. echocardiogram). Before treatment with abiraterone acetate, cardiac failure should be treated and cardiac function optimised. Hypertension, hypokalaemia and fluid retention should be corrected and controlled. During treatment, blood pressure, serum potassium, fluid retention (weight gain, peripheral oedema), and other signs and symptoms of congestive heart failure should be monitored every 2 weeks for 3 months, then monthly thereafter and abnormalities corrected. QT prolongation has been observed in patients experiencing hypokalaemia in association with abiraterone acetate treatment. Assess cardiac function as clinically indicated, institute appropriate management and consider discontinuation of this treatment if there is a clinically significant decrease in cardiac function (see section 4.2).

Hepatotoxicity and hepatic impairment

Marked increases in liver enzymes leading to treatment discontinuation or dose modification occurred in controlled clinical studies (see section 4.8). Serum transaminase levels should be measured prior to starting treatment, every 2 weeks for the first 3 months of treatment, and monthly thereafter. If clinical symptoms or signs suggestive of hepatotoxicity develop, serum transaminases should be measured immediately. If at any time the alanine aminotransferase or aspartate aminotransferase rises above 5× ULN, treatment should be interrupted immediately and liver function closely monitored. Re-treatment may take place only after return of liver function tests to the patient's baseline and at a reduced dose level (see section 4.2).

If patients develop severe hepatotoxicity (alanine aminotransferase or aspartate aminotransferase 20× the ULN) anytime while on therapy, treatment should be discontinued and patients should not be re-treated.

Patients with active or symptomatic viral hepatitis were excluded from clinical trials; thus, there are no data to support the use of abiraterone acetate in this population.

There are no data on the clinical safety and efficacy of multiple doses of abiraterone acetate when administered to patients with moderate or severe hepatic impairment (Child-Pugh Class B or C). The use of abiraterone acetate should be cautiously assessed in patients with moderate hepatic impairment, in whom the benefit clearly should outweigh the possible risk (see sections 4.2 and 5.2). Abiraterone acetate should not be used in patients with severe hepatic impairment (see sections 4.2, 4.3 and 5.2).

There have been rare post-marketing reports of acute liver failure and hepatitis fulminant, some with fatal outcome (see section 4.8).

Corticosteroid withdrawal and coverage of stress situations

Caution is advised and monitoring for adrenocortical insufficiency should occur if patients are withdrawn from prednisone or prednisolone. If abiraterone acetate is continued after corticosteroids are withdrawn, patients should be monitored for symptoms of mineralocorticoid excess (see information above).

In patients on prednisone or prednisolone who are subjected to unusual stress, an increased dose of corticosteroids may be indicated before, during and after the stressful situation.

Bone density

Decreased bone density may occur in men with metastatic advanced prostate cancer. The use of abiraterone acetate in combination with a glucocorticoid could increase this effect.

Prior use of ketoconazole

Lower rates of response might be expected in patients previously treated with

ketoconazole for prostate cancer.

Hyperglycaemia

The use of glucocorticoids could increase hyperglycaemia, therefore blood sugar should be measured frequently in patients with diabetes.

Hypoglycaemia

Cases of hypoglycaemia have been reported when abiraterone acetate + prednisone/ prednisolone was administered to patients with pre-existing diabetes receiving pioglitazone or repaglinide (see section 4.5); therefore, blood sugar should be monitored in patients with diabetes.

Use with chemotherapy

The safety and efficacy of concomitant use of abiraterone acetate with cytotoxic chemotherapy has not been established (see section 5.1).

Potential risks

Anaemia and sexual dysfunction may occur in men with metastatic prostate cancer including those undergoing treatment with abiraterone acetate.

Skeletal muscle effects

Cases of myopathy and rhabdomyolysis have been reported in patients treated with abiraterone acetate. Most cases developed within the first 6 months of treatment and recovered after abiraterone acetate withdrawal. Caution is recommended in patients concomitantly treated with medicinal products known to be associated with myopathy/rhabdomyolysis.

Interactions with other medicinal products

Strong inducers of CYP3A4 during treatment are to be avoided unless there is no therapeutic alternative, due to risk of decreased exposure to abiraterone (see section 4.5).

Combination of abiraterone and prednisone/prednisolone with Ra-223

Treatment with abiraterone acetate and prednisone/prednisolone in combination with Ra-223 is contraindicated (see section 4.3) due to an increased risk of fractures and a trend for increased mortality among asymptomatic or mildly symptomatic prostate cancer patients as observed in clinical trials.

It is recommended that subsequent treatment with Ra-223 is not initiated for at least 5 days after the last administration of abiraterone acetate in combination with prednisone/prednisolone.

Excipients

This medicinal product contains lactose. Patients with rare hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose

malabsorption should not take this medicine.

This medicinal product also contains less than 1 mmol (or 23 mg) sodium per tablet, that is to say essentially “sodium-free”.

4.5 Interaction with other medicinal products and other forms of interaction

Effect of food on abiraterone acetate

Administration with food significantly increases the absorption of abiraterone acetate. The efficacy and safety when given with food have not been established therefore this medicinal product must not be taken with food (see sections 4.2 and 5.2).

Interactions with other medicinal products

Potential for other medicinal products to affect abiraterone exposures

In a clinical pharmacokinetic interaction study of healthy subjects pre-treated with a strong CYP3A4 inducer rifampicin, 600 mg daily for 6 days followed by a single dose of abiraterone acetate 1,000 mg, the mean plasma AUC_{∞} of abiraterone was decreased by 55%.

Strong inducers of CYP3A4 (e.g. phenytoin, carbamazepine, rifampicin, rifabutin, rifapentine, phenobarbital, St. John's Wort [*Hypericum perforatum*]) during treatment are to be avoided, unless there is no therapeutic alternative.

In a separate clinical pharmacokinetic interaction study of healthy subjects, co-administration of ketoconazole, a strong inhibitor of CYP3A4, had no clinically meaningful effect on the pharmacokinetics of abiraterone.

Potential to affect exposures to other medicinal products

Abiraterone acetate is an inhibitor of the hepatic drug-metabolising enzymes CYP2D6 and CYP2C8.

In a study to determine the effects of abiraterone acetate (+ prednisone) on a single dose of the CYP2D6 substrate dextromethorphan, the systemic exposure (AUC) of dextromethorphan was increased approximately 2.9 fold. The AUC_{24} for dextromethorphan, the active metabolite of dextromethorphan, increased approximately 33%.

Caution is advised when administering with medicinal products activated by or metabolised by CYP2D6, particularly with medicinal products that have a narrow therapeutic index. Dose reduction of medicinal products with a narrow therapeutic index that are metabolised by CYP2D6 should be considered. Examples of medicinal products metabolised by CYP2D6 include metoprolol, propranolol, desipramine, venlafaxine, haloperidol, risperidone, propafenone, flecainide, codeine, oxycodone and tramadol (the latter 3 medicinal products requiring CYP2D6 to form their active analgesic metabolites).

In a CYP2C8 drug-drug interaction trial in healthy subjects, the AUC of

pioglitazone was increased by 46% and the AUCs for M-III and M-IV, the active metabolites of pioglitazone, each decreased by 10% when pioglitazone was given together with a single dose of 1,000 mg abiraterone acetate. Patients should be monitored for signs of toxicity related to a CYP2C8 substrate with a narrow therapeutic index if used concomitantly. Examples of medicinal products metabolised by CYP2C8 include pioglitazone and repaglinide (see section 4.4).

In vitro, the major metabolites abiraterone sulphate and N-oxide abiraterone sulphate were shown to inhibit the hepatic uptake transporter OATP1B1 and as a consequence it may increase the concentrations of medicinal products eliminated by OATP1B1. There are no clinical data available to confirm transporter based interaction.

Use with products known to prolong QT interval

Since androgen deprivation treatment may prolong the QT interval, caution is advised when administering abiraterone acetate with medicinal products known to prolong the QT interval or medicinal products able to induce torsades de pointes such as Class IA (e.g. quinidine, disopyramide) or Class III (e.g. amiodarone, sotalol, dofetilide, ibutilide) antiarrhythmic medicinal products, methadone, moxifloxacin, antipsychotics, etc.

Use with Spironolactone

Spironolactone binds to the androgen receptor and may increase prostate specific antigen (PSA) levels. Use with abiraterone acetate is not recommended (see section 5.1).

4.6 Fertility, pregnancy and lactation

Women of childbearing potential

There are no human data on the use of abiraterone acetate in pregnancy and this medicinal product is not for use in women of childbearing potential.

Contraception in males and females

It is not known whether abiraterone acetate or its metabolites are present in semen. A condom is required if the patient is engaged in sexual activity with a pregnant woman. If the patient is engaged in sex with a woman of childbearing potential, a condom is required along with another effective contraceptive method. Studies in animals have shown reproductive toxicity (see section 5.3).

Pregnancy

Abiraterone acetate is not for use in women and is contraindicated in women who are or may potentially be pregnant (see section 4.3 and 5.3).

Breast-feeding

Abiraterone acetate is not for use in women.

Fertility

Abiraterone acetate affected fertility in male and female rats, but these effects were fully reversible (see section 5.3).

4.7 Effects on ability to drive and use machines

Abiraterone acetate has no or negligible influence on the ability to drive and use machines.

4.8 Undesirable effects

Summary of the safety profile

In an analysis of adverse reactions of composite Phase 3 studies with abiraterone acetate, adverse reactions that were observed in $\geq 10\%$ of patients were peripheral oedema, hypokalaemia, hypertension urinary tract infection, and alanine aminotransferase increased and/or aspartate aminotransferase increased.

Other important adverse reactions include, cardiac disorders, hepatotoxicity, fractures, and allergic alveolitis.

Abiraterone acetate may cause hypertension, hypokalaemia and fluid retention as a pharmacodynamic consequence of its mechanism of action. In Phase 3 studies, anticipated mineralocorticoid adverse reactions were seen more commonly in patients treated with abiraterone acetate than in patients treated with placebo: Hypokalaemia 18% vs. 8%, hypertension 22% vs. 16% and fluid retention (peripheral oedema) 23% vs. 17%, respectively. In patients treated with abiraterone acetate versus patients treated with placebo: CTCAE (version 4.0) Grades 3 and 4 hypokalaemia were observed in 6% versus 1%, of patients, CTCAE (version 4.0) Grades 3 and 4 hypertension were observed in 8% versus 5%, and fluid retention (peripheral oedema) Grades 3 and 4 were observed in 1% versus 1% of patients, respectively.

Mineralocorticoid reactions generally were able to be successfully managed medically. Concomitant use of a corticosteroid reduces the incidence and severity of these adverse reactions (see section 4.4).

Tabulated list of adverse reactions

In studies of patients with metastatic advanced prostate cancer who were using an LHRH analogue, or were previously treated with orchiectomy, abiraterone acetate was administered at a dose of 1,000 mg daily in combination with low dose prednisone or prednisolone (either 5 or 10 mg daily depending on the indication).

Adverse reactions observed during clinical studies and post-marketing experience are listed below by frequency category. Frequency categories are defined as follows: 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 (frequency cannot be estimated from the available data).

Within each frequency grouping, undesirable effects are presented in order of decreasing seriousness.

Table 1: Adverse reactions identified in clinical studies and post-marketing.

System Organ Class	Frequency	Adverse reaction and frequency
Infections and infestations	Very common	Urinary tract infection
	Common	Sepsis
Immune system disorders	Not known	Anaphylactic reactions
Endocrine disorders	Uncommon	Adrenal insufficiency
Metabolism and nutrition disorders	Very common	Hypokalaemia
	Common	Hypertriglyceridaemia
Cardiac disorders	Common	Cardiac failure ^a , angina pectoris, atrial fibrillation, tachycardia
	Uncommon	Other arrhythmias
	Not known	Myocardial infarction, QT prolongation (see sections 4.4 and 4.5)
Vascular disorders	Very common	Hypertension
Respiratory, thoracic and mediastinal disorders	Rare	Allergic alveolitis ^b
Gastrointestinal disorders	Very common	Diarrhoea

	Common	Dyspepsia
Hepatobiliary disorders	Very common	Alanine aminotransferase increased and/or aspartate aminotransferase increased ^c
	Rare	Hepatitis fulminant, acute hepatic failure
Skin and subcutaneous tissue disorders	Common	Rash
Musculoskeletal and connective tissue disorders	Uncommon	Myopathy, rhabdomyolysis
Renal and urinary disorders	Common	Haematuria
General disorders and administration site conditions	Very common	Oedema peripheral
Injury, poisoning and procedural complications	Common	Fractures ^d

^a Cardiac failure also includes congestive heart failure, left ventricular dysfunction and ejection fraction decreased.

^b Spontaneous reports from post-marketing experience.

^c Alanine aminotransferase increased and/or aspartate aminotransferase increased includes alanine aminotransferase increased, aspartate aminotransferase increased, and hepatic function abnormal.

^d Fractures includes osteoporosis and all fractures with the exception of pathological fractures.

The following CTCAE (version 4.0) Grade 3 adverse reactions occurred in patients treated with abiraterone acetate: Hypokalaemia 5%; urinary tract infection 2%; alanine aminotransferase increased and/or aspartate aminotransferase increased 4%; hypertension 6%; fractures 2%; peripheral oedema, cardiac failure, and atrial fibrillation 1% each. CTCAE (version 4.0) Grade 3 hypertriglyceridaemia and angina pectoris occurred in < 1% of patients. CTCAE (version 4.0) Grade 4 urinary tract infection, alanine aminotransferase increased and/or aspartate aminotransferase increased, hypokalaemia, cardiac failure, atrial fibrillation, and fractures occurred in < 1% of patients.

A higher incidence of hypertension and hypokalaemia was observed in the hormone sensitive population (Study 3011). Hypertension was reported in

36.7% of patients in the hormone sensitive population (Study 3011) compared to 11.8% and 20.2% in studies 301 and 302, respectively.

Hypokalaemia was observed in 20.4% of patients in the hormone sensitive population (Study 3011) compared to 19.2% and 14.9% in 301 and 302, respectively).

The incidence and severity of adverse events was higher in the subgroup of patients with baseline ECOG2 performance status grade and also in elderly patients (≥ 75 years).

Description of selected adverse reactions

Cardiovascular reactions

The 3 Phase 3 studies excluded patients with uncontrolled hypertension, clinically significant heart disease as evidenced by myocardial infarction, or arterial thrombotic events in the past 6 months, severe or unstable angina, or NYHA Class III or IV heart failure (Study 301) or Class II–IV heart failure (studies 3011 and 302) or cardiac ejection fraction measurement of $< 50\%$. All patients enrolled (both active and placebo-treated patients) were concomitantly treated with androgen deprivation therapy, predominantly with the use of LHRH analogues, which has been associated with diabetes, myocardial infarction, cerebrovascular accident and sudden cardiac death. The incidence of cardiovascular adverse reactions in the Phase 3 studies in patients taking abiraterone acetate vs. patients taking placebo were as follows: Atrial fibrillation 2.6% vs. 2.0%, tachycardia 1.9% vs. 1.0%, angina pectoris 1.7% vs. 0.8%, cardiac failure 0.7% vs. 0.2%, and arrhythmia 0.7% vs. 0.5%.

Hepatotoxicity

Hepatotoxicity with elevated alanine aminotransferase, aspartate aminotransferase and total bilirubin has been reported in patients treated with abiraterone acetate. Across Phase 3 clinical studies, hepatotoxicity Grades 3 and 4 (e.g. alanine aminotransferase or aspartate aminotransferase increases of $> 5\times$ ULN or bilirubin increases $> 1.5\times$ ULN) were reported in approximately 6% of patients who received abiraterone acetate, typically during the first 3 months after starting treatment. In Study 3011, Grade 3 or 4 hepatotoxicity was observed in 8.4% of patients treated with abiraterone acetate. Ten patients who received abiraterone acetate were discontinued because of hepatotoxicity; 2 had Grade 2 hepatotoxicity, 6 had Grade 3 hepatotoxicity, and 2 had Grade 4 hepatotoxicity. No patient died of hepatotoxicity in Study 3011. In the Phase 3 clinical studies, patients whose baseline alanine aminotransferase or aspartate aminotransferase were elevated were more likely to experience liver function test elevations than those beginning with normal values. When elevations of either alanine aminotransferase or aspartate aminotransferase $> 5\times$ ULN, or elevations in bilirubin $> 3\times$ ULN were observed, abiraterone acetate was withheld or discontinued. In 2 instances marked increases in liver function tests occurred (see section 4.4). These 2 patients with normal baseline hepatic function, experienced alanine aminotransferase or aspartate aminotransferase elevations 15–40 \times ULN and bilirubin elevations 2–6 \times ULN. Upon

discontinuation of treatment, both patients had normalisation of their liver function tests and 1 patient was re-treated without recurrence of the elevations. In Study 302, Grade 3 or 4 alanine aminotransferase or aspartate aminotransferase elevations were observed in 35 (6.5%) patients treated with abiraterone acetate.

Aminotransferase elevations resolved in all but 3 patients (2 with new multiple liver metastases and 1 with aspartate aminotransferase elevation approximately 3 weeks after the last dose of abiraterone acetate). In Phase 3 clinical studies, treatment discontinuations due to alanine aminotransferase and aspartate aminotransferase increases or abnormal hepatic function were reported in 1.1% of patients treated with abiraterone acetate and 0.6% of patients treated with placebo; no deaths were reported due to hepatotoxicity events.

In clinical trials, the risk for hepatotoxicity was mitigated by exclusion of patients with baseline hepatitis or significant abnormalities of liver function tests. In the 3011 Study, patients with baseline alanine aminotransferase and aspartate aminotransferase $> 2.5 \times$ ULN, bilirubin $> 1.5 \times$ ULN or those with active or symptomatic viral hepatitis or chronic liver disease; ascites or bleeding disorders secondary to hepatic dysfunction were excluded. In the 301 Study, patients with baseline alanine aminotransferase and aspartate aminotransferase $\geq 2.5 \times$ ULN in the absence of liver metastases and $> 5 \times$ ULN in the presence of liver metastases were excluded. In the 302 Study, patients with liver metastases were not eligible and patients with baseline alanine aminotransferase and aspartate aminotransferase $\geq 2.5 \times$ ULN were excluded. Abnormal liver function tests developing in patients participating in clinical trials were vigorously managed by requiring treatment interruption and permitting re-treatment only after return of liver function tests to the patient's baseline (see section 4.2). Patients with elevations of alanine aminotransferase or aspartate aminotransferase $> 20 \times$ ULN were not re-treated. The safety of re-treatment in such patients is unknown. The mechanism for hepatotoxicity is not understood.

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 Yellow Card Scheme at: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.

4.9 Overdose

Human experience of overdose with abiraterone acetate is limited.

There is no specific antidote. In the event of an overdose, administration

should be withheld and general supportive measures undertaken, including monitoring for arrhythmias, hypokalaemia and for signs and symptoms of fluid retention. Liver function also should be assessed.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Endocrine therapy, other hormone antagonists and related agents; ATC code: L02BX03.

Mechanism of action

Abiraterone acetate is converted *in vivo* to abiraterone, an androgen biosynthesis inhibitor. Specifically, abiraterone selectively inhibits the enzyme 17 α -hydroxylase/C17,20-lyase (CYP17).

This enzyme is expressed in and is required for androgen biosynthesis in testicular, adrenal and prostatic tumour tissues. CYP17 catalyses the conversion of pregnenolone and progesterone into testosterone precursors, DHEA and androstenedione, respectively, by 17 α -hydroxylation and cleavage of the C17,20 bond. CYP17 inhibition also results in increased mineralocorticoid production by the adrenals (see section 4.4).

Androgen-sensitive prostatic carcinoma responds to treatment that decreases androgen levels. Androgen deprivation therapies, such as treatment with LHRH analogues or orchiectomy, decrease androgen production in the testes but do not affect androgen production by the adrenals or in the tumour. Treatment with abiraterone acetate decreases serum testosterone to undetectable levels (using commercial assays) when given with LHRH analogues (or orchiectomy).

Pharmacodynamic effects

Abiraterone acetate decreases serum testosterone and other androgens to levels lower than those achieved by the use of LHRH analogues alone or by orchiectomy. This results from the selective inhibition of the CYP17 enzyme required for androgen biosynthesis. PSA serves as a biomarker in patients with prostate cancer. In a Phase 3 clinical study of patients who failed prior chemotherapy with taxanes, 38% of patients treated with abiraterone acetate, vs. 10% of patients treated with placebo, had at least a 50% decline from baseline in PSA levels.

Clinical efficacy and safety

Efficacy was established in 3 randomised placebo-controlled multicentre Phase 3 clinical studies (Studies 3011, 302 and 301) of patients with mHSPC

and mCRPC. Study 3011 enrolled patients who were newly diagnosed (within 3 months of randomization) mHSPC who had high-risk prognostic factors. High-risk prognosis was defined as having at least 2 of the following 3 risk factors: (1) Gleason score of ≥ 8 ; (2) presence of 3 or more lesions on bone scan; (3) presence of measurable visceral (excluding lymph node disease) metastasis. In the active arm, abiraterone acetate was administered at a dose of 1,000 mg daily in combination with low dose prednisone 5 mg once daily in addition to ADT (LHRH agonist or orchiectomy), which was the standard of care treatment. Patients in the control arm received ADT and placebos for both abiraterone acetate and prednisone. Study 302 enrolled docetaxel naïve patients; whereas, Study 301 enrolled patients who had received prior docetaxel. Patients were using an LHRH analogue or were previously treated with orchiectomy. In the active treatment arm, abiraterone acetate was administered at a dose of 1,000 mg daily in combination with low dose prednisone or prednisolone 5 mg twice daily. Control patients received placebo and low dose prednisone or prednisolone 5 mg twice daily.

Changes in PSA serum concentration independently do not always predict clinical benefit. Therefore, in all studies it was recommended that patients be maintained on their study treatments until discontinuation criteria were met as specified below for each study.

In all studies spironolactone use was not allowed as spironolactone binds to the androgen receptor and may increase PSA levels.

Study 3011 (patients with newly diagnosed high-risk mHSPC)

In Study 3011, (n = 1,199) the median age of enrolled patients was 67 years. The number of patients treated with abiraterone acetate by racial group was Caucasian 832 (69.4%), Asian 246 (20.5%), Black or African American 25 (2.1%), other 80 (6.7%), unknown/not reported 13 (1.1%), and American Indian or Alaska Native 3 (0.3%). The ECOG performance status was 0 or 1 for 97% of patients. Patients with known brain metastasis, uncontrolled hypertension, significant heart disease, or NYHA Class II – IV heart failure were excluded. Patients that were treated with prior pharmacotherapy, radiation therapy, or surgery for metastatic prostate cancer were excluded with the exception of up to 3 months of ADT or 1 course of palliative radiation or surgical therapy to treat symptoms resulting from metastatic disease. Co-primary efficacy endpoints were overall survival (OS) and radiographic progression-free survival (rPFS). The median baseline pain score, as measured by the Brief Pain Inventory Short Form (BPI-SF) was 2.0 in both the treatment and placebo groups. In addition to the co-primary endpoint measures, benefit was also assessed using time to skeletal-related event (SRE), time to subsequent therapy for prostate cancer, time to initiation of chemotherapy, time to pain progression, and time to PSA progression. Treatment continued until disease progression, withdrawal of consent, the occurrence of unacceptable toxicity, or death.

rPFS was defined as the time from randomization to the occurrence of radiographic progression or death from any cause. Radiographic progression included progression by bone scan (according to modified PCWG2) or progression of soft tissue lesions by CT or MRI (according to RECIST 1.1).

A significant difference in rPFS between treatment groups was observed (see

Table 2 and Figure 1).

Table 2: rPFS stratified analysis; intent-to-treat population (Study PCR3011)

	Abiraterone acetate with Prednisone (AA-P)	Placebo
Subjects randomised	597	602
Event	239 (40.0%)	354 (58.8%)
Censored	358 (60.0%)	248 (41.2%)
Time to event (months)		
Median (95% CI)	33.02 (29.57, NE)	14.78 (14.69, 18.27)
Range	(0.0+, 41.0+)	(0.0+, 40.6+)
p-value ^a	< 0.0001	
HR (95% CI) ^b	0.466 (0.394, 0.550)	

+ = Censored observation.

NE = Not estimable. The radiographic progression and death are considered in defining the rPFS event.

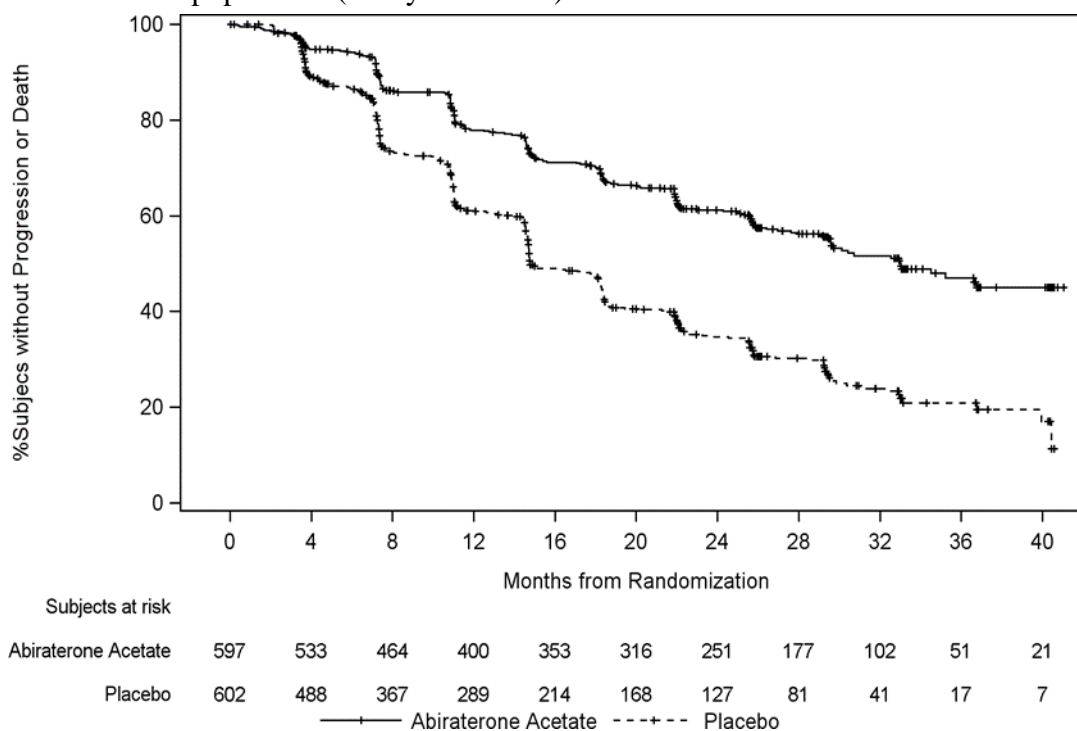
AA-P = Subjects who received abiraterone acetate and prednisone.

HR = Hazard ratio.

^a p-value is from a log-rank test stratified by ECOG PS score (0/1 or 2) and visceral lesion (absent or present).

^b HR is from stratified proportional hazards model. HR < 1 favours AA-P.

Figure 1: Kaplan-Meier plot of Radiographic Progression-free Survival; intent-to-treat population (Study PCR3011).



A statistically significant improvement in OS in favour of AA-P + ADT was observed with a 34% reduction in the risk of death compared to placebo + ADT (HR = 0.66; 95% CI: [0.56, 0.8]; $p < 0.0001$, (see Table 3 and Figure 2).

Table 3: OS of patients treated with either abiraterone acetate or placebos in Study PCR3011 (intent-to-treat analysis)

	AA + prednisone	Placebos
	n = 597	n = 602
OS (months)		
Deaths (%)	275 (46%)	343 (57%)
Median survival (months) (95% CI)	53.3 (48.2, NE)	36.5 (33.5, 40.0)
HR (95% CI) ^a	0.66 (0.56, 0.78)	

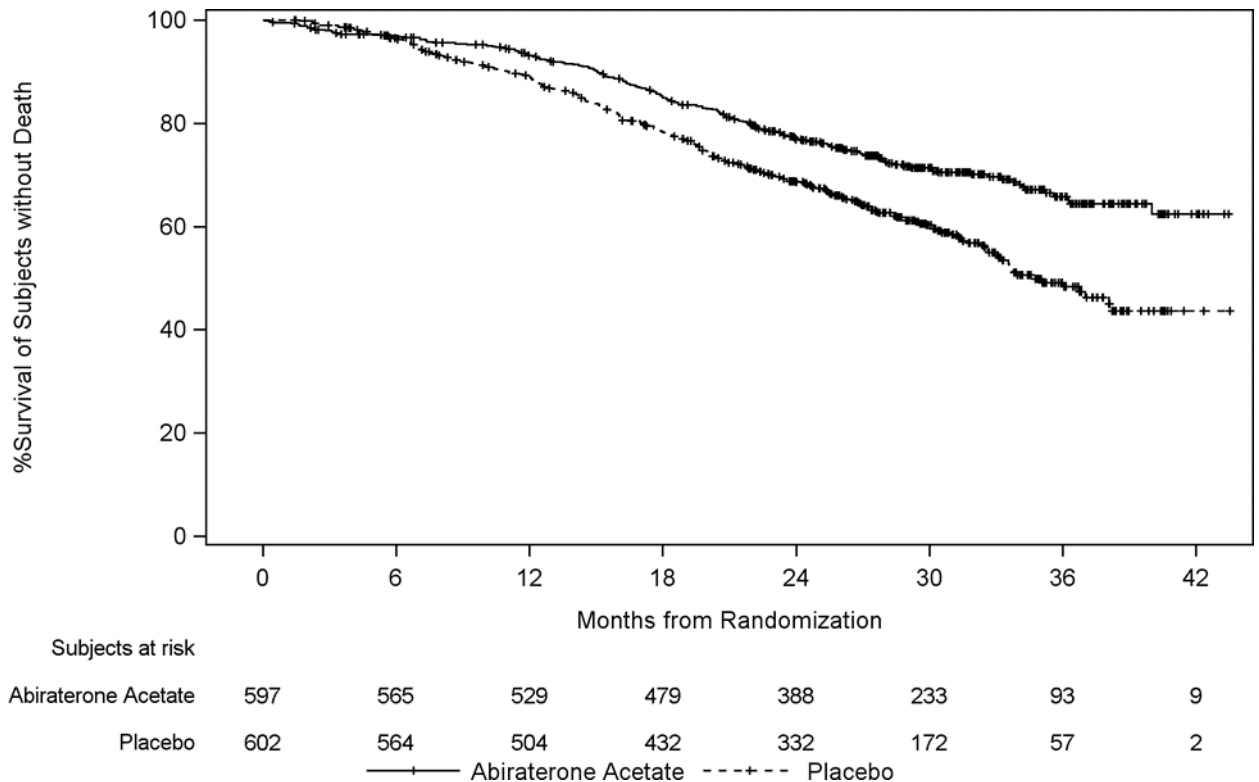
NE = Not estimable.

AA = Abiraterone acetate.

HR = Hazard ratio.

^a HR is derived from a stratified proportional hazards model. HR < 1 favours AA + prednisone.

Figure 2: Kaplan-Meier plot of Overall Survival; intent-to-treat population Study PCR3011 Analysis.



Subgroup analyses consistently favour treatment with abiraterone acetate. The treatment effect of AA-P on rPFS and OS across the pre-specified subgroups was favourable and consistent with the overall study population, except for the subgroup of ECOG score of 2 where no trend towards benefit was observed,

however the small sample size (n = 40) limits drawing any meaningful conclusion.

In addition to the observed improvements in OS and rPFS, benefit was demonstrated for abiraterone acetate vs. placebo treatment in all prospectively-defined secondary endpoints.

Study 302 (chemotherapy naïve patients)

This study enrolled chemotherapy naïve patients who were asymptomatic or mildly symptomatic and for whom chemotherapy was not yet clinically indicated. A score of 0–1 on Brief Pain Inventory-Short Form (BPI-SF) worst pain in last 24 hours was considered asymptomatic, and a score of 2–3 was considered mildly symptomatic.

In Study 302, (n = 1,088) the median age of enrolled patients was 71 years for patients treated with abiraterone acetate + prednisone or prednisolone and 70 years for patients treated with placebo + prednisone or prednisolone. The number of patients treated with abiraterone acetate by racial group was Caucasian 520 (95.4%), Black 15 (2.8%), Asian 4 (0.7%) and other 6 (1.1%). The Eastern Cooperative Oncology Group (ECOG) performance status was 0 for 76% of patients, and 1 for 24% of patients in both arms. 50% of patients had only bone metastases, an additional 31% of patients had bone and soft tissue or lymph node metastases and 19% of patients had only soft tissue or lymph node metastases. Patients with visceral metastases were excluded. Co-primary efficacy endpoints were OS and rPFS. In addition to the co-primary endpoint measures, benefit was also assessed using time to opiate use for cancer pain, time to initiation of cytotoxic chemotherapy, time to deterioration in ECOG performance score by ≥ 1 point and time to PSA progression based on Prostate Cancer Working Group-2 (PCWG2) criteria. Study treatments were discontinued at the time of unequivocal clinical progression. Treatments could also be discontinued at the time of confirmed radiographic progression at the discretion of the investigator.

rPFS was assessed with the use of sequential imaging studies as defined by PCWG2 criteria (for bone lesions) and modified Response Evaluation Criteria In Solid Tumours (RECIST) criteria (for soft tissue lesions). Analysis of rPFS utilised centrally-reviewed radiographic assessment of progression.

At the planned rPFS analysis there were 401 events, 150 (28%) of patients treated with abiraterone acetate and 251 (46%) of patients treated with placebo had radiographic evidence of progression or had died. A significant difference in rPFS between treatment groups was observed (see Table 4 and Figure 3).

Table 4: Study 302: rPFS of patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy.

	AA	Placebo
	n = 546	n = 542
rPFS		
Progression or death	150 (28%)	251 (46%)
Median rPSF in months (95% CI)	Not reached (11.66, NE)	8.3 (8.12, 8.54)

p-value ^a	< 0.0001
HR (95% CI) ^b	0.452 (0.347, 0.522)

NE = Not estimable.

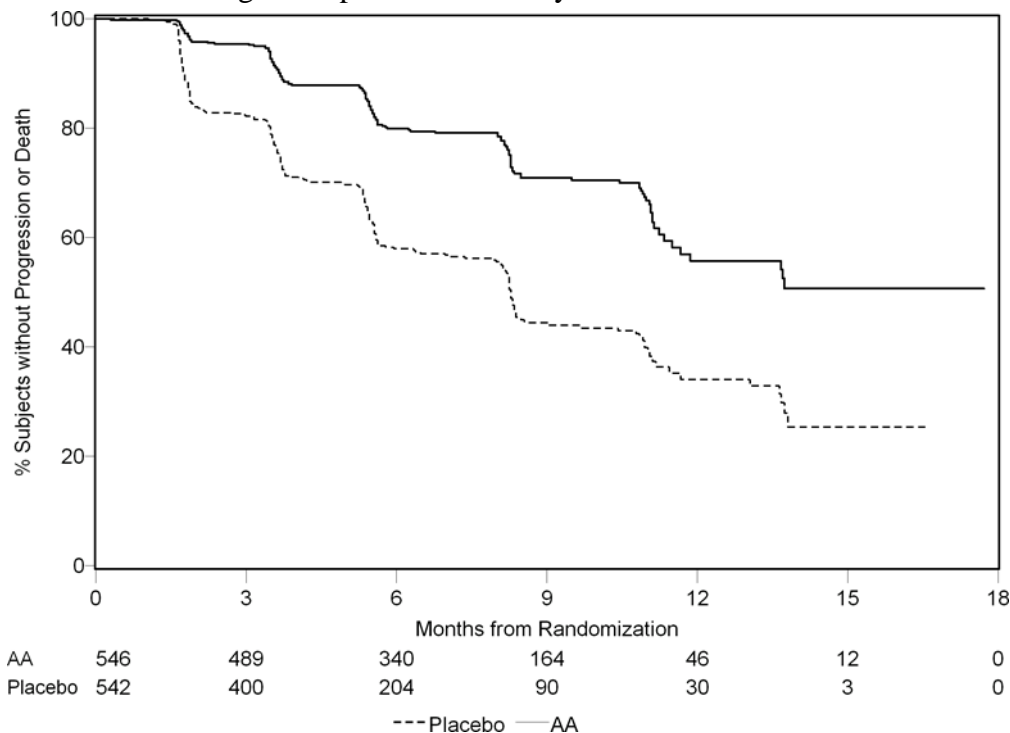
AA = Abiraterone acetate.

HR = Hazard ratio.

^a p-value is derived from a log-rank test stratified by baseline ECOG score (0 or 1).

^b HR < 1 favours AA.

Figure 3: Kaplan-Meier curves of rPFS in patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy.



AA = Abiraterone acetate.

However, subject data continued to be collected through the date of the second IA of OS. The investigator radiographic review of rPFS performed as a follow up sensitivity analysis is presented in Table 5 and Figure 4.

607 subjects had radiographic progression or died: 271 (50%) in the abiraterone acetate group and 336 (62%) in the placebo group. Treatment with abiraterone acetate decreased the risk of radiographic progression or death by 47% compared with placebo (HR = 0.530; 95% CI: [0.451, 0.623], p < 0.0001). The median rPFS was 16.5 months in the abiraterone acetate group and 8.3 months in the placebo group.

Table 5: Study 302: rPFS of patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy (at second IA of OS-investigator review).

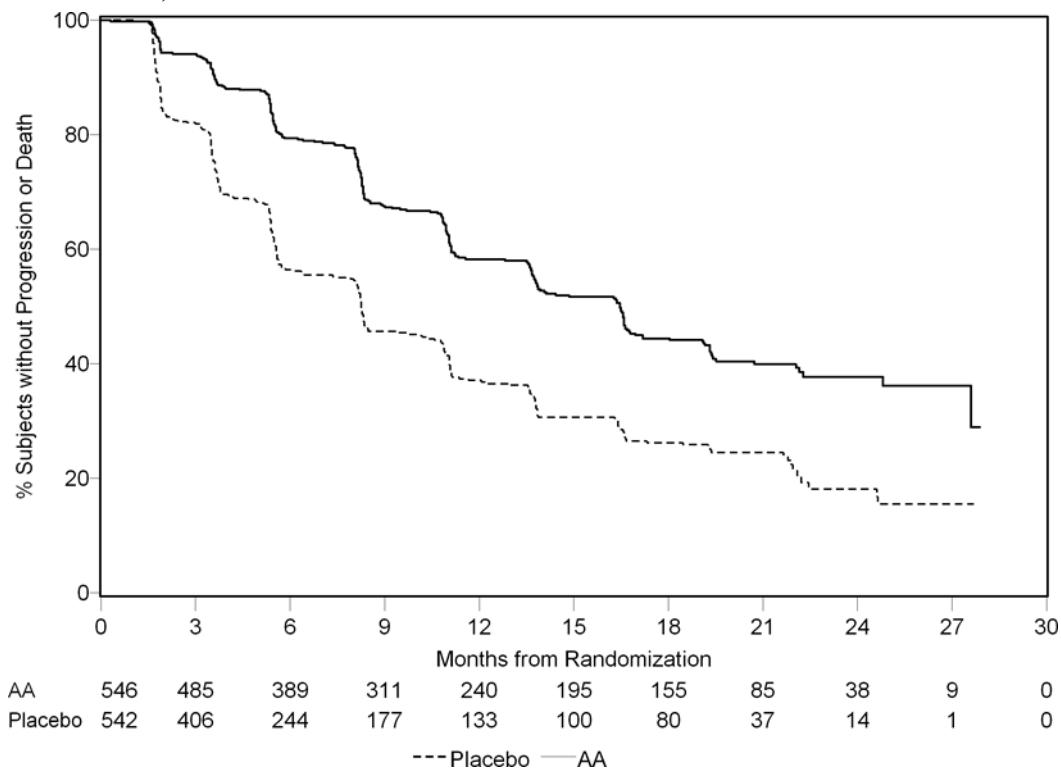
	AA	Placebo
--	-----------	----------------

	n = 546	n = 542
rPFS		
Progression or death	271 (50%)	336 (62%)
Median rPSF in months (95% CI)	16.5 (13.80, 16.79)	8.3 (8.05, 9.43)
p-value ^a	< 0.0001	
HR (95% CI) ^b	0.530 (0.451, 0.623)	

^a p-value is derived from a log-rank test stratified by baseline ECOG score (0 or 1).

^b HR < 1 favours AA.

Figure 4: Kaplan-Meier curves of rPFS in patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy (at second IA of OS-investigator review).



AA = Abiraterone acetate.

A planned IA for OS was conducted after 333 deaths were observed. The study was unblinded based on the magnitude of clinical benefit observed and patients in the placebo group were offered treatment with abiraterone acetate. OS was longer for abiraterone acetate than placebo with a 25% reduction in risk of death (HR = 0.752; 95% CI: [0.606, 0.934], p = 0.0097), but OS was not mature and interim results did not meet the pre-specified stopping boundary for statistical significance (see Table 4). Survival continued to be followed after this IA.

The planned final analysis for OS was conducted after 741 deaths were observed (median follow up of 49 months). 65% (354 of 546) of patients treated with abiraterone acetate, compared with 71% (387 of 542) of patients

treated with placebo, had died. A statistically significant OS benefit in favour of the abiraterone acetate -treated group was demonstrated with a 19.4% reduction in risk of death

(HR = 0.806; 95% CI: [0.697, 0.931], p = 0.0033) and an improvement in median OS of 4.4 months (abiraterone acetate 34.7 months, placebo 30.3 months) (see Table 6 and Figure 5). This improvement was demonstrated even though 44% of patients in the placebo arm received abiraterone acetate as subsequent therapy.

Table 6: Study 302: OS of patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy.

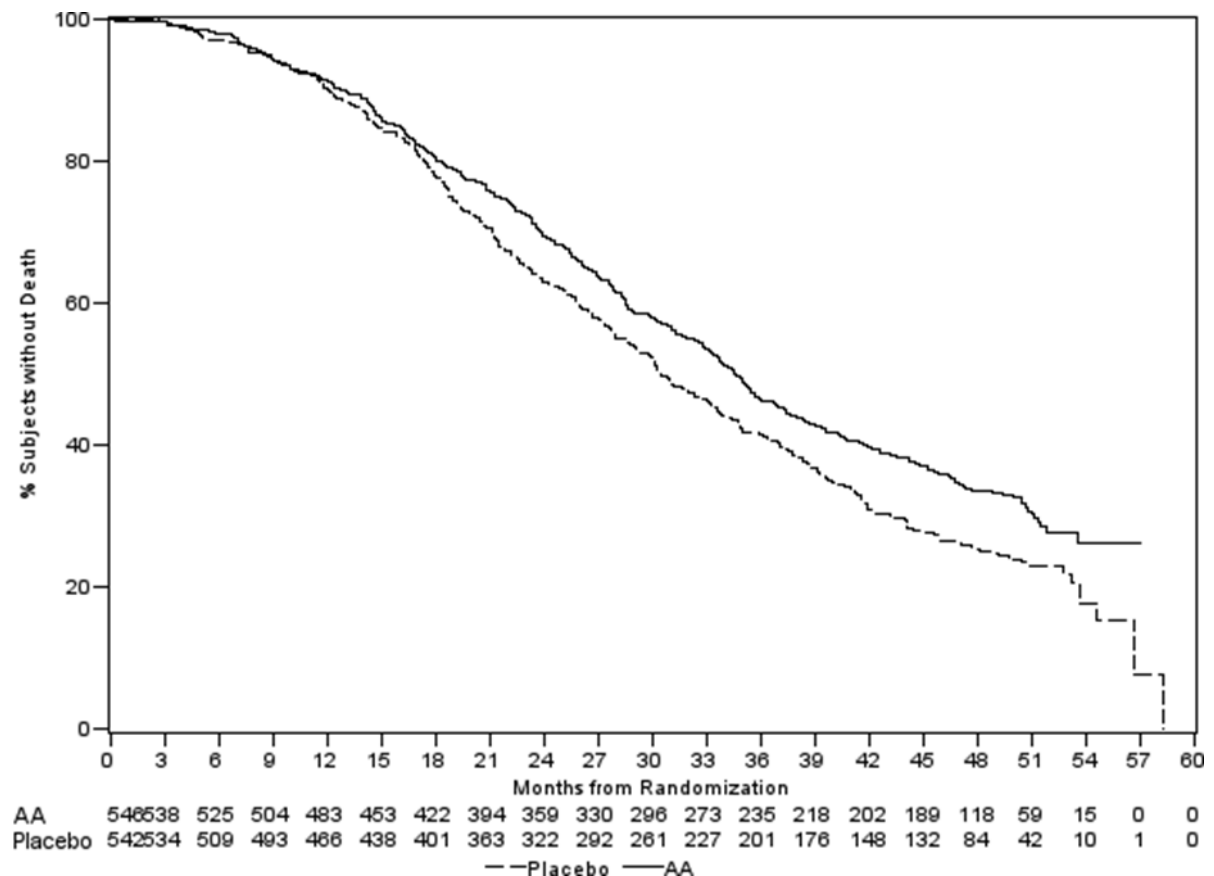
	AA	Placebo
	n = 546	n = 542
Interim survival analysis		
Deaths (%)	147 (27%)	186 (34%)
Median survival in months (95% CI)	Not reached (NE, NE)	27.2 (25.95, NE)
p-value ^a	0.0097	
HR (95% CI) ^b	0.752 (0.606, 0.934)	
Final survival analysis		
Deaths (%)	354 (65%)	387 (71%)
Median OS in months (95% CI)	34.7 (32.7, 36.8)	30.3 (28.7, 33.3)
p-value ^a	0.0033	
HR (95% CI) ^b	0.806 (0.697, 0.931)	

NE = Not estimated.

^a p-value is derived from a log-rank test stratified by baseline ECOG score (0 or 1).

^b HR < 1 favours AA.

Figure 5: Kaplan-Meier survival curves of patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy, final analysis.



AA = Abiraterone acetate.

In addition to the observed improvements in OS and rPFS, benefit was demonstrated for abiraterone acetate vs. placebo treatment in all secondary endpoint measures as follows:

- Time to PSA progression based on PCWG2 criteria: The median time to PSA progression was 11.1 months for patients receiving abiraterone acetate and 5.6 months for patients receiving placebo (HR = 0.488; 95% CI: [0.420, 0.568], $p < 0.0001$). The time to PSA progression was approximately doubled with abiraterone acetate treatment (HR = 0.488). The proportion of subjects with a confirmed PSA response was greater in the abiraterone acetate group than in the placebo group (62% vs. 24%; $p < 0.0001$). In subjects with measurable soft tissue disease, significantly increased numbers of complete and partial tumour responses were seen with abiraterone acetate treatment.
- Time to opiate use for cancer pain: The median time to opiate use for prostate cancer pain at the time of final analysis was 33.4 months for patients receiving abiraterone acetate and was 23.4 months for patients receiving placebo (HR = 0.721; 95% CI: [0.614, 0.846], $p < 0.0001$).
- Time to initiation of cytotoxic chemotherapy: The median time to initiation of cytotoxic chemotherapy was 25.2 months for patients receiving abiraterone acetate and 16.8 months for patients receiving placebo (HR = 0.580; 95% CI: [0.487, 0.691], $p < 0.0001$).
- Time to deterioration in ECOG performance score by ≥ 1 point: The median time to deterioration in ECOG performance score by ≥ 1 point was 12.3 months for patients receiving abiraterone acetate and months for patients receiving placebo

(HR = 0.821; 95% CI: [0.714, 0.943], p = 0.0053).

The following study endpoints demonstrated a statistically significant advantage in favour of abiraterone acetate treatment:

- **Objective response:** Objective response was defined as the proportion of subjects with measurable disease achieving a complete or partial response according to RECIST criteria (baseline lymph node size was required to be ≥ 2 cm to be considered a target lesion). The proportion of subjects with measurable disease at baseline who had an objective response was 36% in the abiraterone acetate group and 16% in the placebo group (p < 0.0001).
- **Pain:** Treatment with abiraterone acetate significantly reduced the risk of average pain intensity progression by 18% compared with placebo (p = 0.0490). The median time to progression was 26.7 months in the abiraterone acetate group and 18.4 months in the placebo group.
- **Time to degradation in the FACT-P (total score):** Treatment with abiraterone acetate decreased the risk of FACT-P (total score) degradation by 22% compared with placebo (p = 0.0028). The median time to degradation in FACT-P (Total Score) was 12.7 months in the abiraterone acetate group and 8.3 months in the placebo group.

Study 301 (patients who had received prior chemotherapy)

Study 301 enrolled patients who had received prior docetaxel. Patients were not required to show disease progression on docetaxel, as toxicity from this chemotherapy may have led to discontinuation. Patients were maintained on study treatments until there was PSA progression (confirmed 25% increase over the patient's baseline/nadir) together with protocol-defined radiographic progression and symptomatic or clinical progression. Patients with prior ketoconazole treatment for prostate cancer were excluded from this study. The primary efficacy endpoint was OS.

The median age of enrolled patients was 69 years (range 39 – 95). The number of patients treated with abiraterone acetate by racial group was Caucasian 737 (93.2%), Black 28 (3.5%), Asian 11 (1.4%) and other 14 (1.8%). 11% of patients enrolled had an ECOG performance score of 2; 70% had radiographic evidence of disease progression with or without PSA progression; 70% had received 1 prior cytotoxic chemotherapy and 30% received 2. Liver metastasis was present in 11% of patients treated with abiraterone acetate.

In a planned analysis conducted after 552 deaths were observed, 42% (333 of 797) of patients treated with abiraterone acetate compared with 55% (219 of 398) of patients treated with placebo, had died. A statistically significant improvement in median OS was seen in patients treated with abiraterone acetate (see Table 7).

Table 7: OS of patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy.

	AA	Placebo
	n = 797	n = 398
Primary survival analysis		

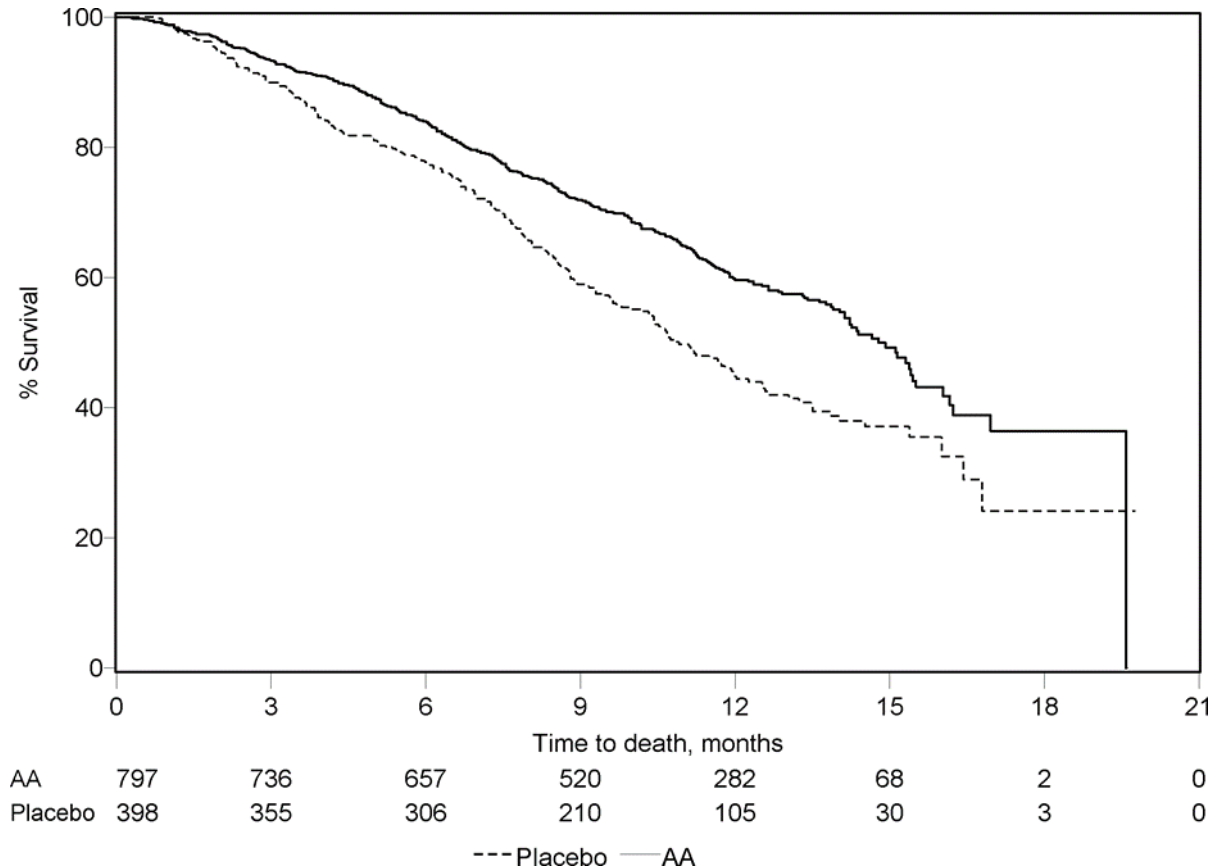
Deaths (%)	333 (42%)	219 (55%)
Median survival in months (95% CI)	14.8 (14.1, 15.4)	10.9 (10.2, 12.0)
p-value ^a	< 0.0001	
HR (95% CI) ^b	0.646 (0.543, 0.768)	
Updated survival analysis		
Deaths (%)	501 (63%)	274 (69%)
Median survival in months (95% CI)	15.8 (14.8, 17.0)	11.2 (10.4, 13.1)
HR (95% CI) ^b	0.740 (0.638, 0.859)	

^a p-value is derived from a log-rank test stratified by ECOG performance status score (0 vs. 1 vs. 2), pain score (absent vs. present), number of prior chemotherapy regimens (1 vs. 2), and type of disease progression (PSA only vs. radiographic).

^b HR is derived from a stratified proportional hazards model. HR < 1 favours AA.

At all evaluation time points after the initial few months of treatment, a higher proportion of patients treated with abiraterone acetate remained alive, compared with the proportion of patients treated with placebo (see Figure 6).

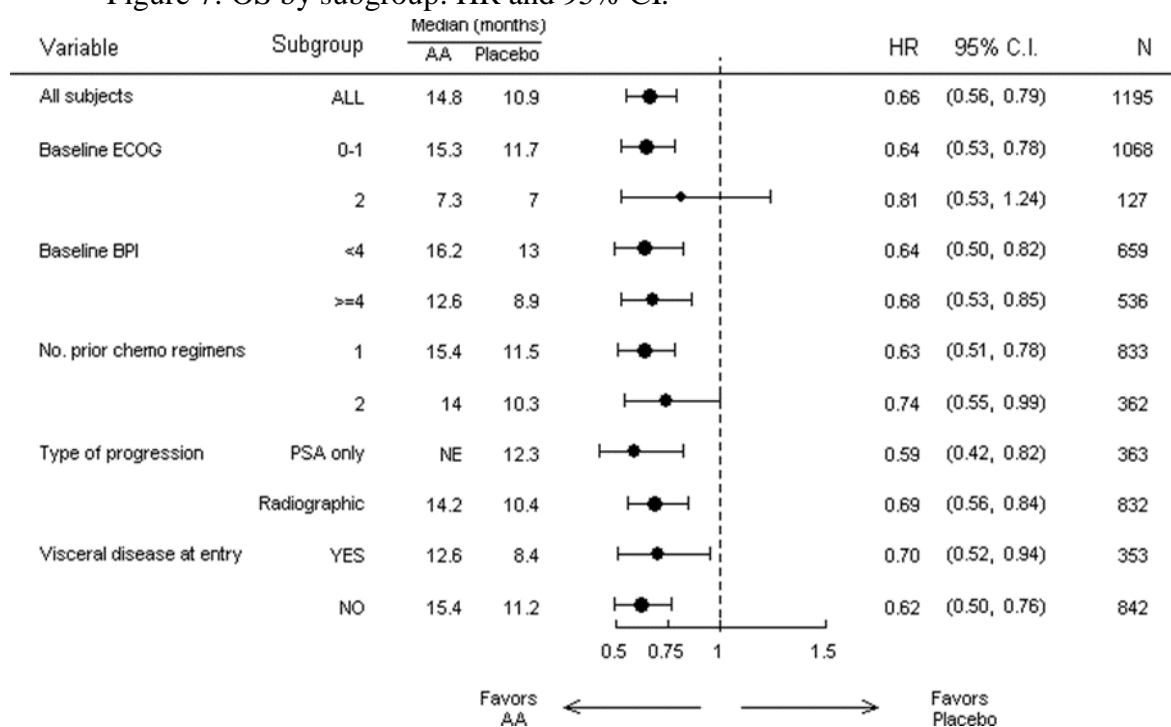
Figure 6: Kaplan-Meier survival curves of patients treated with either abiraterone acetate or placebo in combination with prednisone or prednisolone + LHRH analogues or prior orchiectomy.



AA = Abiraterone acetate.

Subgroup survival analyses showed a consistent survival benefit for treatment with abiraterone acetate (see Figure 7).

Figure 7: OS by subgroup: HR and 95% CI.



AA = Abiraterone acetate.

BPI = Brief pain inventory.

C.I. = Confidence interval

ECOG = Eastern Cooperative Oncology Group performance score

HR = Hazard ratio.

NE = Not evaluable.

In addition to the observed improvement in OS, all secondary study endpoints favoured abiraterone acetate and were statistically significant after adjusting for multiple testing as follows:

- Patients receiving abiraterone acetate demonstrated a significantly higher total PSA response rate (defined as a $\geq 50\%$ reduction from baseline), compared with patients receiving placebo, 38% vs. 10%, $p < 0.0001$.
- The median time to PSA progression was 10.2 months for patients treated with abiraterone acetate and 6.6 months for patients treated with placebo (HR = 0.580; 95% CI: [0.462, 0.728], $p < 0.0001$).
- The median rPFS was 5.6 months for patients treated with abiraterone acetate and 3.6 months for patients who received placebo (HR = 0.673; 95% CI: [0.585, 0.776], $p < 0.0001$).

Pain

The proportion of patients with pain palliation was statistically significantly higher in the abiraterone acetate group than in the placebo group (44% vs. 27%, $p = 0.0002$). A responder for pain palliation was defined as a patient who experienced at least a 30% reduction from baseline in the BPI-SF worst pain

intensity score over the last 24 hours without any increase in analgesic usage score observed at 2 consecutive evaluations 4 weeks apart. Only patients with a baseline pain score of ≥ 4 and at least 1 post-baseline pain score were analysed (n = 512) for pain palliation.

A lower proportion of patients treated with abiraterone acetate had pain progression compared to patients taking placebo at 6 (22% vs. 28%), 12 (30% vs. 38%) and 18 months (35% vs. 46%). Pain progression was defined as an increase from baseline of $\geq 30\%$ in the BPI-SF worst pain intensity score over the previous 24 hours without a decrease in analgesic usage score observed at 2 consecutive visits, or an increase of $\geq 30\%$ in analgesic usage score observed at 2 consecutive visits. The time to pain progression at the 25th percentile was 7.4 months in the abiraterone acetate group, vs. 4.7 months in the placebo group.

Skeletal-related events

A lower proportion of patients in the abiraterone acetate group had Skeletal-related events compared with the placebo group at 6 months (18% vs. 28%), 12 months (30% vs. 40%), and 18 months (35% vs. 40%). The time to first SRE at the 25th percentile in the abiraterone acetate group was twice that of the control group at 9.9 months vs. 4.9 months. A SRE was defined as a pathological fracture, spinal cord compression, palliative radiation to bone, or surgery to bone.

Paediatric population

The European Medicines Agency has waived the obligation to submit the results of studies with the reference medicinal product containing abiraterone acetate in all subsets of the paediatric population in advanced prostate cancer. See section 4.2 for information on paediatric use.

5.2 Pharmacokinetic properties

Following administration of abiraterone acetate, the pharmacokinetics of abiraterone and abiraterone acetate have been studied in healthy subjects, patients with metastatic advanced prostate cancer and subjects without cancer with hepatic or renal impairment. Abiraterone acetate is rapidly converted *in vivo* to abiraterone, an androgen biosynthesis inhibitor (see section 5.1).

Absorption

Following oral administration of abiraterone acetate in the fasting state, the time to reach maximum plasma abiraterone concentration is approximately 2 hours.

Administration of abiraterone acetate with food, compared with administration in a fasted state, results in up to a 10-fold (AUC) and up to a 17-fold (C_{\max}) increase in mean systemic exposure of abiraterone, depending on the fat content of the meal. Given the normal variation in the content and composition

of meals, taking abiraterone acetate with meals has the potential to result in highly variable exposures. Therefore, abiraterone acetate must not be taken with food. It should be taken at least 1 hour before or at least 2 hours after eating. The tablets should be swallowed whole with water (see section 4.2).

Distribution

The plasma protein binding of ¹⁴C-abiraterone in human plasma is 99.8%. The apparent volume of distribution is approximately 5,630 l, suggesting that abiraterone extensively distributes to peripheral tissues.

Biotransformation

Following oral administration of ¹⁴C-abiraterone acetate as capsules, abiraterone acetate is hydrolysed to abiraterone, which then undergoes metabolism including sulphation, hydroxylation and oxidation primarily in the liver. The majority of circulating radioactivity (approximately 92%) is found in the form of metabolites of abiraterone. Of 15 detectable metabolites, 2 main metabolites, abiraterone sulphate and N-oxide abiraterone sulphate, each represents approximately 43% of total radioactivity.

Elimination

The mean half-life of abiraterone in plasma is approximately 15 hours based on data from healthy subjects. Following oral administration of ¹⁴C-abiraterone acetate 1,000 mg, approximately 88% of the radioactive dose is recovered in faeces and approximately 5% in urine. The major compounds present in faeces are unchanged abiraterone acetate and abiraterone (approximately 55% and 22% of the administered dose, respectively).

Hepatic impairment

The pharmacokinetics of abiraterone acetate was examined in subjects with pre-existing mild or moderate hepatic impairment (Child-Pugh Class A and B, respectively) and in healthy control subjects. Systemic exposure to abiraterone after a single oral 1,000 mg dose increased by approximately 11% and 260% in subjects with mild and moderate pre-existing hepatic impairment, respectively. The mean half-life of abiraterone is prolonged to approximately 18 hours in subjects with mild hepatic impairment and to approximately 19 hours in subjects with moderate hepatic impairment.

In another trial, the pharmacokinetics of abiraterone were examined in subjects with pre-existing severe (n = 8) hepatic impairment (Child-Pugh Class C) and in 8 healthy control subjects with normal hepatic function. The AUC to abiraterone increased by approximately 600% and the fraction of free drug increased by 80% in subjects with severe hepatic impairment compared to subjects with normal hepatic function.

No dose adjustment is necessary for patients with pre-existing mild hepatic impairment.

The use of abiraterone acetate should be cautiously assessed in patients with moderate hepatic impairment in whom the benefit clearly should outweigh the possible risk (see sections 4.2 and 4.4). Abiraterone acetate should not be used

in patients with severe hepatic impairment (see sections 4.2, 4.3 and 4.4).

For patients who develop hepatotoxicity during treatment, suspension of treatment and dose adjustment may be required (see sections 4.2 and 4.4).

Renal impairment

The pharmacokinetics of abiraterone acetate was compared in patients with end-stage renal disease on a stable haemodialysis schedule vs. matched control subjects with normal renal function. Systemic exposure to abiraterone after a single oral 1,000 mg dose did not increase in subjects with end-stage renal disease on dialysis. Administration in patients with renal impairment, including severe renal impairment, does not require dose reduction (see section 4.2). However, there is no clinical experience in patients with prostate cancer and severe renal impairment. Caution is advised in these patients.

5.3 Preclinical safety data

In all animal toxicity studies, circulating testosterone levels were significantly reduced. As a result, reduction in organ weights and morphological and/or histopathological changes in the reproductive organs, and the adrenal, pituitary and mammary glands were observed. All changes showed complete or partial reversibility. The changes in the reproductive organs and androgen-sensitive organs are consistent with the pharmacology of abiraterone. All treatment-related hormonal changes reversed or were shown to be resolving after a 4-week recovery period.

In fertility studies in both male and female rats, abiraterone acetate reduced fertility, which was completely reversible in 4 – 16 weeks after abiraterone acetate was stopped.

In a developmental toxicity study in the rat, abiraterone acetate affected pregnancy including reduced foetal weight and survival. Effects on the external genitalia were observed though abiraterone acetate was not teratogenic.

In these fertility and developmental toxicity studies performed in the rat, all effects were related to the pharmacological activity of abiraterone.

Aside from reproductive organ changes seen in all animal toxicology studies, non-clinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, genotoxicity and carcinogenic potential. Abiraterone acetate was not carcinogenic in a

6-month study in the transgenic (Tg.rasH2) mouse. In a 24-month carcinogenicity study in the rat, abiraterone acetate increased the incidence of interstitial cell neoplasms in the testes. This finding is considered related to the pharmacological action of abiraterone and rat specific. Abiraterone acetate was not carcinogenic in female rats.

The active substance, abiraterone, shows an environmental risk for the aquatic environment, especially to fish.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Tablet core

Lactose, monohydrate

Cellulose, Microcrystalline

Croscarmellose sodium

Sodium lauryl sulphate

Hypromellose

Magnesium stearate

Silica, colloidal

Film-coating

Polyvinyl alcohol (E1203)

Macrogol 3350

Talc (E553b)

Titanium dioxide (E171)

Iron oxide red (E172)

Iron oxide black (E172)

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

3 years

6.4 Special precautions for storage

This medicinal product does not require any special storage conditions.

6.5 Nature and contents of container

PVC/PVDC90 foil and an aluminium foil.

The pack contains 56 or 60 film-coated tablets.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal

Based on its mechanism of action, this medicinal product may harm a developing foetus; therefore, women who are pregnant or may be pregnant should not handle it without protections, e.g., gloves.

Any unused medicinal product or waste material should be disposed of in accordance with local requirements. This medicinal product may pose a risk to the aquatic environment (see section 5.3).

7 MARKETING AUTHORISATION HOLDER

Zentiva Pharma UK Limited

12 New Fetter Lane

London

EC4A 1JP

United Kingdom

8 MARKETING AUTHORISATION NUMBER(S)

PL 17780/1040

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

12/10/2021

10 DATE OF REVISION OF THE TEXT

01/11/2023