

**XTANDI- enzalutamide capsule**  
**Astellas Pharma US, Inc.**

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**HIGHLIGHTS OF PRESCRIBING INFORMATION**

**These highlights do not include all the information needed to use XTANDI® safely and effectively. See full prescribing information for XTANDI.**

**XTANDI® (enzalutamide) capsules for oral use**

**Initial U.S. Approval: 2012**

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**RECENT MAJOR CHANGES**-----

Contraindications (4) 10/2016  
Warnings and Precautions (5.1) 10/2016

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**INDICATIONS AND USAGE**-----

XTANDI is an androgen receptor inhibitor indicated for the treatment of patients with metastatic castration-resistant prostate cancer. (1)

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**DOSAGE AND ADMINISTRATION**-----

XTANDI 160 mg (four 40 mg capsules) administered orally once daily. Swallow capsules whole. XTANDI can be taken with or without food. (2.1)

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**DOSAGE FORMS AND STRENGTHS**-----

Capsule 40 mg (3)

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**CONTRAINDICATIONS**-----

Pregnancy (4, 8.1)

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**WARNINGS AND PRECAUTIONS**-----

- Seizure occurred in 0.5% of patients receiving XTANDI. There is no clinical trial experience with XTANDI in patients who have had a seizure. Permanently discontinue XTANDI in patients who develop a seizure during treatment. (5.1)
- Posterior reversible encephalopathy syndrome (PRES): Discontinue XTANDI. (5.2)

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**ADVERSE REACTIONS**-----

The most common adverse reactions ( $\geq 10\%$ ) are asthenia/fatigue, back pain, decreased appetite, constipation, arthralgia, diarrhea, hot flush, upper respiratory tract infection, peripheral edema, dyspnea, musculoskeletal pain, weight decreased, headache, hypertension, and dizziness/vertigo. (6.1)

**To report SUSPECTED ADVERSE REACTIONS, contact Astellas Pharma US, Inc. at 1-800-727-7003 or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).**

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**DRUG INTERACTIONS**-----

- Avoid strong CYP2C8 inhibitors, as they can increase the plasma exposure to XTANDI. If co-administration is necessary, reduce the dose of XTANDI. (2.2, 7.1)
- Avoid strong CYP3A4 inducers as they can decrease the plasma exposure to XTANDI. If co-administration is necessary, increase the dose of XTANDI. (2.2, 7.2)
- Avoid CYP3A4, CYP2C9 and CYP2C19 substrates with a narrow therapeutic index, as XTANDI may decrease the plasma exposures of these drugs. If XTANDI is co-administered with warfarin (CYP2C9 substrate), conduct additional INR monitoring. (7.3)

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**USE IN SPECIFIC POPULATIONS**-----

- Females and Males of Reproductive Potential: Advise males with female partners of reproductive potential to use effective contraception. (8.3)

See 17 for **PATIENT COUNSELING INFORMATION** and **FDA-approved patient labeling**.

**Revised: 10/2016**

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\* Sections or subsections omitted from the full prescribing information are not listed.

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## **FULL PRESCRIBING INFORMATION**

### **1 INDICATIONS AND USAGE**

XTANDI<sup>®</sup> is indicated for the treatment of patients with metastatic castration-resistant prostate cancer (CRPC).

### **2 DOSAGE AND ADMINISTRATION**

#### **2.1 Dosing Information**

The recommended dose of XTANDI is 160 mg (four 40 mg capsules) administered orally once daily. XTANDI can be taken with or without food [*see Clinical Pharmacology (12.3)*]. Swallow capsules whole. Do not chew, dissolve, or open the capsules.

## 2.2 Dose Modifications

If a patient experiences a  $\geq$  Grade 3 toxicity or an intolerable side effect, withhold dosing for one week or until symptoms improve to  $\leq$  Grade 2, then resume at the same or a reduced dose (120 mg or 80 mg), if warranted.

### **Concomitant Strong CYP2C8 Inhibitors**

The concomitant use of strong CYP2C8 inhibitors should be avoided if possible. If patients must be co-administered a strong CYP2C8 inhibitor, reduce the XTANDI dose to 80 mg once daily. If co-administration of the strong inhibitor is discontinued, the XTANDI dose should be returned to the dose used prior to initiation of the strong CYP2C8 inhibitor [see *Drug Interactions (7.1) and Clinical Pharmacology (12.3)*].

### **Concomitant Strong CYP3A4 Inducers**

The concomitant use of strong CYP3A4 inducers should be avoided if possible. If patients must be co-administered a strong CYP3A4 inducer, increase the XTANDI dose from 160 mg to 240 mg once daily. If co-administration of the strong CYP3A4 inducer is discontinued, the XTANDI dose should be returned to the dose used prior to initiation of the strong CYP3A4 inducer [see *Drug Interactions (7.2) and Clinical Pharmacology (12.3)*].

## 3 DOSAGE FORMS AND STRENGTHS

XTANDI 40 mg capsules are white to off-white oblong soft gelatin capsules imprinted in black ink with ENZ.

## 4 CONTRAINDICATIONS

### **Pregnancy**

XTANDI can cause fetal harm and potential loss of pregnancy [see *Use in Specific Populations (8.1)*].

## 5 WARNINGS AND PRECAUTIONS

### **5.1 Seizure**

Seizure occurred in 0.5% of patients receiving XTANDI in clinical studies. In placebo-controlled studies, 8 of 1671 (0.5%) patients treated with XTANDI and 1 of 1243 (0.1%) patients treated with placebo experienced a seizure. In patients who previously received docetaxel, 7 of 800 (0.9%) patients treated with XTANDI experienced a seizure and no patients treated with placebo experienced a seizure. Seizure occurred from 31 to 603 days after initiation of XTANDI. In a placebo-controlled study in chemotherapy-naïve patients, 1 of 871 (0.1%) treated with XTANDI and 1 of 844 (0.1%) patients treated with placebo experienced a seizure. In bicalutamide-controlled studies conducted in chemotherapy-naïve patients, 3 of 380 (0.8%) patients treated with XTANDI and 1 of 387 (0.3%) patients treated with bicalutamide experienced a seizure. Patients experiencing seizure were permanently discontinued from therapy and all seizure events resolved. There is no clinical trial experience re-administering XTANDI to patients who experienced seizure.

Limited safety data are available in patients with predisposing factors for seizure because these patients were generally excluded from the trials. These exclusion criteria included a history of seizure, underlying brain injury with loss of consciousness, transient ischemic attack within the past 12 months, cerebral vascular accident, brain metastases, and brain arteriovenous malformation. Study 1 excluded the use of concomitant medications that may lower the seizure threshold, whereas Study 2 permitted the use of these medications.

Because of the risk of seizure associated with XTANDI use, patients should be advised of the risk of

engaging in any activity where sudden loss of consciousness could cause serious harm to themselves or others. Permanently discontinue XTANDI in patients who develop a seizure during treatment.

## 5.2 Posterior Reversible Encephalopathy Syndrome (PRES)

There have been reports of posterior reversible encephalopathy syndrome (PRES) in patients receiving XTANDI [see *Adverse Reactions* (6.2)]. PRES is a neurological disorder which can present with rapidly evolving symptoms including seizure, headache, lethargy, confusion, blindness, and other visual and neurological disturbances, with or without associated hypertension. A diagnosis of PRES requires confirmation by brain imaging, preferably magnetic resonance imaging (MRI). Discontinue XTANDI in patients who develop PRES.

## 6 ADVERSE REACTIONS

The following is discussed in more detail in other sections of the labeling:

- Seizure [see *Warnings and Precautions* (5.1)]
- Posterior Reversible Encephalopathy Syndrome (PRES) [see *Warnings and Precautions* (5.2)]

### 6.1 Clinical Trial Experience

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

Three randomized clinical trials enrolled patients with metastatic prostate cancer that has progressed on androgen deprivation therapy (GnRH therapy or bilateral orchiectomy), a disease setting that is also defined as metastatic CRPC. Two trials were placebo-controlled (Studies 1 and 2), and one trial was bicalutamide-controlled (Study 3). In Studies 1 and 2, patients received XTANDI 160 mg or placebo orally once daily. In Study 3, patients received XTANDI 160 mg or bicalutamide 50 mg orally once daily. All patients continued androgen deprivation therapy. Patients were allowed, but not required, to take glucocorticoids.

The most common adverse reactions ( $\geq 10\%$ ) that occurred more commonly ( $\geq 2\%$  over placebo) in the XTANDI-treated patients from the two randomized placebo-controlled clinical trials were asthenia/fatigue, back pain, decreased appetite, constipation, arthralgia, diarrhea, hot flush, upper respiratory tract infection, peripheral edema, dyspnea, musculoskeletal pain, weight decreased, headache, hypertension, and dizziness/vertigo.

#### Study 1: XTANDI versus Placebo in Metastatic CRPC Following Chemotherapy

Study 1 enrolled 1199 patients with metastatic CRPC who had previously received docetaxel. The median duration of treatment was 8.3 months with XTANDI and 3.0 months with placebo. During the trial, 48% of patients on the XTANDI arm and 46% of patients on the placebo arm received glucocorticoids.

Grade 3 and higher adverse reactions were reported among 47% of XTANDI-treated patients and 53% of placebo-treated patients. Discontinuations due to adverse events were reported for 16% of XTANDI-treated patients and 18% of placebo-treated patients. The most common adverse reaction leading to treatment discontinuation was seizure, which occurred in 0.9% of the XTANDI-treated patients compared to none (0%) of the placebo-treated patients. Table 1 shows adverse reactions reported in Study 1 that occurred at a  $\geq 2\%$  higher frequency in the XTANDI arm compared to the placebo arm.

**Table 1. Adverse Reactions in Study 1**

	XTANDI	Placebo
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	N = 800		N = 399	
	Grade 1-4 <sup>a</sup> (%)	Grade 3-4 (%)	Grade 1-4 (%)	Grade 3-4 (%)
<b>General Disorders</b>				
Asthenic Conditions <sup>b</sup>	50.6	9.0	44.4	9.3
Peripheral Edema	15.4	1.0	13.3	0.8
<b>Musculoskeletal And Connective Tissue Disorders</b>				
Back Pain	26.4	5.3	24.3	4.0
Arthralgia	20.5	2.5	17.3	1.8
Musculoskeletal Pain	15.0	1.3	11.5	0.3
Muscular Weakness	9.8	1.5	6.8	1.8
Musculoskeletal Stiffness	2.6	0.3	0.3	0.0
<b>Gastrointestinal Disorders</b>				
Diarrhea	21.8	1.1	17.5	0.3
<b>Vascular Disorders</b>				
Hot Flush	20.3	0.0	10.3	0.0
Hypertension	6.4	2.1	2.8	1.3
<b>Nervous System Disorders</b>				
Headache	12.1	0.9	5.5	0.0
Dizziness <sup>c</sup>	9.5	0.5	7.5	0.5
Spinal Cord Compression and Cauda Equina Syndrome	7.4	6.6	4.5	3.8
Paresthesia	6.6	0.0	4.5	0.0
Mental Impairment Disorders <sup>d</sup>	4.3	0.3	1.8	0.0
Hypoesthesia	4.0	0.3	1.8	0.0
<b>Infections And Infestations</b>				
Upper Respiratory Tract Infection <sup>e</sup>	10.9	0.0	6.5	0.3
Lower Respiratory Tract And Lung Infection <sup>f</sup>	8.5	2.4	4.8	1.3
<b>Psychiatric Disorders</b>				
Insomnia	8.8	0.0	6.0	0.5
Anxiety	6.5	0.3	4.0	0.0
<b>Renal And Urinary Disorders</b>				
Hematuria	6.9	1.8	4.5	1.0
Pollakiuria	4.8	0.0	2.5	0.0
<b>Injury, Poisoning And Procedural Complications</b>				
Fall	4.6	0.3	1.3	0.0
Non-pathologic Fractures	4.0	1.4	0.8	0.3
<b>Skin And Subcutaneous Tissue Disorders</b>				
Pruritus	3.8	0.0	1.3	0.0
Dry Skin	3.5	0.0	1.3	0.0
<b>Respiratory Disorders</b>				
Epistaxis	3.3	0.1	1.3	0.3

a CTCAE v4

b Includes asthenia and fatigue.

c Includes dizziness and vertigo.

d Includes amnesia, memory impairment, cognitive disorder, and disturbance in attention.

e Includes nasopharyngitis, upper respiratory tract infection, sinusitis, rhinitis, pharyngitis, and laryngitis.

f Includes pneumonia, lower respiratory tract infection, bronchitis, and lung infection.

## Study 2: XTANDI versus Placebo in Chemotherapy-naïve Metastatic CRPC

Study 2 enrolled 1717 patients with metastatic CRPC who had not received prior cytotoxic chemotherapy, of whom 1715 received at least one dose of study drug. The median duration of treatment was 17.5 months with XTANDI and 4.6 months with placebo. Grade 3-4 adverse reactions were reported in 44% of XTANDI-treated patients and 37% of placebo-treated patients. Discontinuations due to adverse events were reported for 6% of XTANDI-treated patients and 6% of placebo-treated patients. The most common adverse reaction leading to treatment discontinuation was fatigue/asthenia, which occurred in 1% of patients on each treatment arm. Table 2 includes adverse reactions reported in Study 2 that occurred at a  $\geq 2\%$  higher frequency in the XTANDI arm compared to the placebo arm.

**Table 2. Adverse Reactions in Study 2**

	XTANDI N = 871		Placebo N = 844	
	Grade 1-4 <sup>a</sup> (%)	Grade 3-4 (%)	Grade 1-4 (%)	Grade 3-4 (%)
<b>General Disorders</b>				
Asthenic Conditions <sup>b</sup>	46.9	3.4	33.0	2.8
Peripheral Edema	11.5	0.2	8.2	0.4
<b>Musculoskeletal And Connective Tissue Disorders</b>				
Back Pain	28.6	2.5	22.4	3.0
Arthralgia	21.4	1.6	16.1	1.1
<b>Gastrointestinal Disorders</b>				
Constipation	23.2	0.7	17.3	0.4
Diarrhea	16.8	0.3	14.3	0.4
<b>Vascular Disorders</b>				
Hot Flush	18.0	0.1	7.8	0.0
Hypertension	14.2	7.2	4.1	2.3
<b>Nervous System Disorders</b>				
Dizziness <sup>c</sup>	11.3	0.3	7.1	0.0
Headache	11.0	0.2	7.0	0.4
Dysgeusia	7.6	0.1	3.7	0.0
Mental Impairment Disorders <sup>d</sup>	5.7	0.0	1.3	0.1
Restless Legs Syndrome	2.1	0.1	0.4	0.0
<b>Respiratory Disorders</b>				
Dyspnea <sup>e</sup>	11.0	0.6	8.5	0.6
<b>Infections And Infestations</b>				
Upper Respiratory Tract Infection <sup>f</sup>	16.4	0.0	10.5	0.0
Lower Respiratory Tract And Lung Infection <sup>g</sup>	7.9	1.5	4.7	1.1
<b>Psychiatric Disorders</b>				
Insomnia	8.2	0.1	5.7	0.0
<b>Renal And Urinary Disorders</b>				
Hematuria	8.8	1.3	5.8	1.3
<b>Injury, Poisoning And Procedural Complications</b>				
Fall	12.7	1.6	5.3	0.7
Non-Pathological Fracture	8.8	2.1	3.0	1.1

<b>Metabolism and Nutrition Disorders</b>				
Decreased Appetite	18.9	0.3	16.4	0.7
<b>Investigations</b>				
Weight Decreased	12.4	0.8	8.5	0.2
<b>Reproductive System and Breast disorders</b>				
Gynecomastia	3.4	0.0	1.4	0.0
a CTCAE v4				
b Includes asthenia and fatigue.				
c Includes dizziness and vertigo.				
d Includes amnesia, memory impairment, cognitive disorder, and disturbance in attention.				
e Includes dyspnea, exertional dyspnea, and dyspnea at rest.				
f Includes nasopharyngitis, upper respiratory tract infection, sinusitis, rhinitis, pharyngitis, and laryngitis.				
g Includes pneumonia, lower respiratory tract infection, bronchitis, and lung infection.				

### Study 3: XTANDI versus Bicalutamide in Chemotherapy-naïve Metastatic CRPC

Study 3 enrolled 375 patients with metastatic CRPC who had not received prior cytotoxic chemotherapy, of whom 372 received at least one dose of study drug. The median duration of treatment was 11.6 months with XTANDI and 5.8 months with bicalutamide. Discontinuations with an adverse event as the primary reason were reported for 7.6% of XTANDI-treated patients and 6.3% of bicalutamide-treated patients. The most common adverse reactions leading to treatment discontinuation were back pain and pathological fracture, which occurred in 3.8% of XTANDI-treated patients for each event and in 2.1% and 1.6% of bicalutamide-treated patients, respectively. Table 3 shows overall and common adverse reactions ( $\geq 10\%$ ) in XTANDI-treated patients.

**Table 3. Adverse Reactions in Study 3**

	<b>XTANDI (N=183)</b>		<b>Bicalutamide (N=189)</b>	
	<b>Grade 1-4<sup>a</sup> (%)</b>	<b>Grade 3-4 (%)</b>	<b>Grade 1-4<sup>a</sup> (%)</b>	<b>Grade 3-4 (%)</b>
<b>Overall</b>	94.0	38.8	94.2	37.6
<b>General Disorders</b>				
Asthenic Conditions <sup>b</sup>	31.7	1.6	22.8	1.1
<b>Musculoskeletal And Connective Tissue Disorders</b>				
Back Pain	19.1	2.7	18.0	1.6
Musculoskeletal Pain <sup>c</sup>	16.4	1.1	14.3	0.5
<b>Vascular Disorders</b>				
Hot Flush	14.8	0	11.1	0
Hypertension	14.2	7.1	7.4	4.2
<b>Gastrointestinal Disorders</b>				
Nausea	14.2	0	17.5	0
Constipation	12.6	1.1	13.2	0.5
Diarrhea	11.5	0	9.0	1.1
<b>Infections And Infestations</b>				
Upper Respiratory Tract Infection <sup>d</sup>	12.0	0	6.3	0.5
<b>Investigational</b>				
Weight Loss	10.9	0.5	7.9	0.5

a CTCAE v 4

- b Including asthenia and fatigue.
- c Including musculoskeletal pain and pain in extremity
- d Including nasopharyngitis, upper respiratory tract infection, sinusitis, rhinitis, pharyngitis, and laryngitis

## **Laboratory Abnormalities**

In the two randomized placebo-controlled clinical trials, Grade 1-4 neutropenia occurred in 15% of patients treated with XTANDI (1% Grade 3-4) and in 6% of patients treated with placebo (0.5% Grade 3-4). The incidence of Grade 1-4 thrombocytopenia was 6% of patients treated with XTANDI (0.3% Grade 3-4) and 5% of patients treated with placebo (0.5% Grade 3-4). Grade 1-4 elevations in ALT occurred in 10% of patients treated with XTANDI (0.2% Grade 3-4) and 16% of patients treated with placebo (0.2% Grade 3-4). Grade 1-4 elevations in bilirubin occurred in 3% of patients treated with XTANDI (0.1% Grade 3-4) and 2% of patients treated with placebo (no Grade 3-4).

## **Infections**

In Study 1, 1% of patients treated with XTANDI compared to 0.3% of patients treated with placebo died from infections or sepsis. In Study 2, 1 patient in each treatment group (0.1%) had an infection resulting in death.

## **Falls and Fall-related Injuries**

In the two randomized placebo-controlled clinical trials, falls including fall-related injuries, occurred in 9% of patients treated with XTANDI compared to 4% of patients treated with placebo. Falls were not associated with loss of consciousness or seizure. Fall-related injuries were more severe in patients treated with XTANDI and included non-pathologic fractures, joint injuries, and hematomas.

## **Hypertension**

In the two randomized placebo-controlled trials, hypertension was reported in 11% of patients receiving XTANDI and 4% of patients receiving placebo. No patients experienced hypertensive crisis. Medical history of hypertension was balanced between arms. Hypertension led to study discontinuation in < 1% of patients in each arm.

## **6.2 Post-Marketing Experience**

The following additional adverse reactions have been identified during post approval use of XTANDI. Because these reactions were reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate the frequency or establish a causal relationship to drug exposure.

*Neurological Disorders:* posterior reversible encephalopathy syndrome (PRES)

## **7 DRUG INTERACTIONS**

### **7.1 Drugs that Inhibit CYP2C8**

Co-administration of a strong CYP2C8 inhibitor (gemfibrozil) increased the composite area under the plasma concentration-time curve (AUC) of enzalutamide plus N-desmethyl enzalutamide by 2.2-fold. Co-administration of XTANDI with strong CYP2C8 inhibitors should be avoided if possible. If co-administration of XTANDI with a strong CYP2C8 inhibitor cannot be avoided, reduce the dose of XTANDI [see *Dosage and Administration (2.2) and Clinical Pharmacology (12.3)*].

### **7.2 Drugs that Induce CYP3A4**

Co-administration of rifampin (strong CYP3A4 inducer and moderate CYP2C8 inducer) decreased the composite AUC of enzalutamide plus N-desmethyl enzalutamide by 37%. Co-administration of strong CYP3A4 inducers (e.g., carbamazepine, phenobarbital, phenytoin, rifabutin, rifampin, rifapentine) with XTANDI should be avoided if possible. St John's wort may decrease enzalutamide exposure and



should be avoided. If co-administration of a strong CYP3A4 inducer with XTANDI cannot be avoided, increase the dose of XTANDI [see *Dosage and Administration (2.2) and Clinical Pharmacology (12.3)*].

### **7.3 Effect of XTANDI on Drug Metabolizing Enzymes**

Enzalutamide is a strong CYP3A4 inducer and a moderate CYP2C9 and CYP2C19 inducer in humans. At steady state, XTANDI reduced the plasma exposure to midazolam (CYP3A4 substrate), warfarin (CYP2C9 substrate), and omeprazole (CYP2C19 substrate). Concomitant use of XTANDI with narrow therapeutic index drugs that are metabolized by CYP3A4 (e.g., alfentanil, cyclosporine, dihydroergotamine, ergotamine, fentanyl, pimozide, quinidine, sirolimus and tacrolimus), CYP2C9 (e.g., phenytoin, warfarin) and CYP2C19 (e.g., S-mephenytoin) should be avoided, as enzalutamide may decrease their exposure. If co-administration with warfarin cannot be avoided, conduct additional INR monitoring [see *Clinical Pharmacology (12.3)*].

## **8 USE IN SPECIFIC POPULATIONS**

### **8.1 Pregnancy**

#### Risk Summary

XTANDI is contraindicated for use in pregnant women because the drug can cause fetal harm and potential loss of pregnancy. XTANDI is not indicated for use in females. There are no human data on the use of XTANDI in pregnant women. In animal reproduction studies, oral administration of enzalutamide in pregnant mice during organogenesis caused adverse developmental effects at doses lower than the maximum recommended human dose [see *Data*].

#### Data

##### *Animal Data*

In an embryo-fetal developmental toxicity study in mice, enzalutamide caused developmental toxicity when administered at oral doses of 10 or 30 mg/kg/day throughout the period of organogenesis (gestational days 6-15). Findings included embryo-fetal lethality (increased post-implantation loss and resorptions) and decreased anogenital distance at  $\geq 10$  mg/kg/day, and cleft palate and absent palatine bone at 30 mg/kg/day. Doses of 30 mg/kg/day caused maternal toxicity. The doses tested in mice (1, 10 and 30 mg/kg/day) resulted in systemic exposures (AUC) approximately 0.04, 0.4 and 1.1 times, respectively, the exposures in patients. Enzalutamide did not cause developmental toxicity in rabbits when administered throughout the period of organogenesis (gestational days 6-18) at dose levels up to 10 mg/kg/day (approximately 0.4 times the exposures in patients based on AUC).

### **8.2 Lactation**

#### Risk Summary

XTANDI is not indicated for use in females. There is no information available on the presence of XTANDI in human milk, the effects of the drug on the breastfed infant, or the effects of the drug on milk production.

### **8.3 Females and Males of Reproductive Potential**

#### Contraception

##### *Males*

Based on findings in animal reproduction studies, advise male patients with female partners of reproductive potential to use effective contraception during treatment and for 3 months after the final dose of XTANDI [see *Use in Specific Populations (8.1)*].

#### Infertility

Based on animal studies, XTANDI may impair fertility in males of reproductive potential [see *Nonclinical Toxicology (13.1)*].

#### **8.4 Pediatric Use**

Safety and effectiveness of XTANDI in pediatric patients have not been established.

#### **8.5 Geriatric Use**

Of 1671 patients who received XTANDI in the two randomized placebo-controlled clinical trials, 75% were 65 and over, while 31% were 75 and over. No overall differences in safety or effectiveness were observed between these patients and younger patients. Other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

#### **8.6 Patients with Renal Impairment**

A dedicated renal impairment trial for XTANDI has not been conducted. Based on the population pharmacokinetic analysis using data from clinical trials in patients with metastatic CRPC and healthy volunteers, no significant difference in enzalutamide clearance was observed in patients with pre-existing mild to moderate renal impairment ( $30 \text{ mL/min} \leq \text{creatinine clearance [CrCL]} \leq 89 \text{ mL/min}$ ) compared to patients and volunteers with baseline normal renal function ( $\text{CrCL} \geq 90 \text{ mL/min}$ ). No initial dosage adjustment is necessary for patients with mild to moderate renal impairment. Severe renal impairment ( $\text{CrCL} < 30 \text{ mL/min}$ ) and end-stage renal disease have not been assessed [see *Clinical Pharmacology (12.3)*].

#### **8.7 Patients with Hepatic Impairment**

Dedicated hepatic impairment trials compared the composite systemic exposure of enzalutamide plus N-desmethyl enzalutamide in volunteers with baseline mild, moderate, or severe hepatic impairment (Child-Pugh Class A, B, or C, respectively) versus healthy controls with normal hepatic function. The composite AUC of enzalutamide plus N-desmethyl enzalutamide was similar in volunteers with mild, moderate, or severe baseline hepatic impairment compared to volunteers with normal hepatic function. No initial dosage adjustment is necessary for patients with baseline mild, moderate, or severe hepatic impairment [see *Clinical Pharmacology (12.3)*].

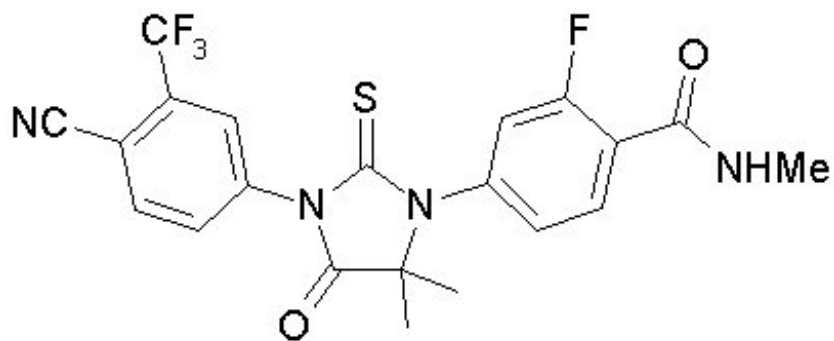
### **10 OVERDOSAGE**

In the event of an overdose, stop treatment with XTANDI and initiate general supportive measures taking into consideration the half-life of 5.8 days. In a dose escalation study, no seizures were reported at  $\leq 240 \text{ mg}$  daily, whereas 3 seizures were reported, 1 each at 360 mg, 480 mg, and 600 mg daily. Patients may be at increased risk of seizure following an overdose.

### **11 DESCRIPTION**

Enzalutamide is an androgen receptor inhibitor. The chemical name is 4-{3-[4-cyano-3-(trifluoromethyl)phenyl]-5,5-dimethyl-4-oxo-2-sulfanylideneimidazolidin-1-yl}-2-fluoro-N-methylbenzamide.

The molecular weight is 464.44 and molecular formula is  $\text{C}_{21}\text{H}_{16}\text{F}_4\text{N}_4\text{O}_2\text{S}$ . The structural formula is:



Enzalutamide is a white crystalline non-hygroscopic solid. It is practically insoluble in water.

XTANDI is provided as liquid-filled soft gelatin capsules for oral administration. Each capsule contains 40 mg of enzalutamide as a solution in caprylocaproyl polyoxyglycerides. The inactive ingredients are caprylocaproyl polyoxyglycerides, butylated hydroxyanisole, butylated hydroxytoluene, gelatin, sorbitol sorbitan solution, glycerin, purified water, titanium dioxide, and black iron oxide.

## 12 CLINICAL PHARMACOLOGY

### 12.1 Mechanism of Action

Enzalutamide is an androgen receptor inhibitor that acts on different steps in the androgen receptor signaling pathway. Enzalutamide has been shown to competitively inhibit androgen binding to androgen receptors and inhibit androgen receptor nuclear translocation and interaction with DNA. A major metabolite, N-desmethyl enzalutamide, exhibited similar *in vitro* activity to enzalutamide. Enzalutamide decreased proliferation and induced cell death of prostate cancer cells *in vitro*, and decreased tumor volume in a mouse prostate cancer xenograft model.

### 12.2 Pharmacodynamics

#### Cardiac Electrophysiology

The effect of enzalutamide 160 mg/day at steady state on the QTc interval was evaluated in 796 patients with metastatic CRPC. No large difference (i.e., greater than 20 ms) was observed between the mean QT interval change from baseline in patients treated with XTANDI and that in patients treated with placebo, based on the Fridericia correction method. However, small increases in the mean QTc interval (i.e., less than 10 ms) due to enzalutamide cannot be excluded due to limitations of the study design.

### 12.3 Pharmacokinetics

The pharmacokinetics of enzalutamide and its major active metabolite (N-desmethyl enzalutamide) were evaluated in patients with metastatic CRPC and healthy male volunteers. The plasma enzalutamide pharmacokinetics are adequately described by a linear two-compartment model with first-order absorption.

#### **Absorption**

Following oral administration (XTANDI 160 mg daily) in patients with metastatic CRPC, the median time to reach maximum plasma enzalutamide concentrations ( $C_{max}$ ) is 1 hour (range 0.5 to 3 hours). At steady state, the plasma mean  $C_{max}$  values for enzalutamide and N-desmethyl enzalutamide are 16.6  $\mu\text{g/mL}$  (23% CV) and 12.7  $\mu\text{g/mL}$  (30% CV), respectively, and the plasma mean predose trough values are 11.4  $\mu\text{g/mL}$  (26% CV) and 13.0  $\mu\text{g/mL}$  (30% CV), respectively.

With the daily dosing regimen, enzalutamide steady state is achieved by Day 28, and enzalutamide accumulates approximately 8.3-fold relative to a single dose. Daily fluctuations in enzalutamide plasma

concentrations are low (mean peak-to-trough ratio of 1.25). At steady state, enzalutamide showed approximately dose proportional pharmacokinetics over the daily dose range of 30 to 360 mg.

A single 160 mg oral dose of XTANDI was administered to healthy volunteers with a high-fat meal or in the fasted condition. A high-fat meal did not alter the AUC to enzalutamide or N-desmethyl enzalutamide. The results are summarized in Figure 1.

### **Distribution and Protein Binding**

The mean apparent volume of distribution (V/F) of enzalutamide in patients after a single oral dose is 110 L (29% CV).

Enzalutamide is 97% to 98% bound to plasma proteins, primarily albumin. N-desmethyl enzalutamide is 95% bound to plasma proteins. *In vitro*, there was no protein binding displacement between enzalutamide and other highly protein bound drugs (warfarin, ibuprofen, and salicylic acid) at clinically relevant concentrations.

### **Metabolism**

Following single oral administration of <sup>14</sup>C-enzalutamide 160 mg, plasma samples were analyzed for enzalutamide and its metabolites up to 77 days post dose. Enzalutamide, N-desmethyl enzalutamide, and a major inactive carboxylic acid metabolite accounted for 88% of the <sup>14</sup>C-radioactivity in plasma, representing 30%, 49%, and 10%, respectively, of the total <sup>14</sup>C-AUC<sub>0-inf</sub>.

*In vitro*, human CYP2C8 and CYP3A4 are responsible for the metabolism of enzalutamide. Based on *in vivo* and *in vitro* data, CYP2C8 is primarily responsible for the formation of the active metabolite (N-desmethyl enzalutamide).

*In vitro*, N-desmethyl enzalutamide is not a substrate of human CYP1A1, CYP1A2, CYP2A6, CYP2B6, CYP2C8, CYP2C9, CYP2C18, CYP2C19, CYP2D6, CYP2E1 and CYP3A4/5.

### **Elimination**

Enzalutamide is primarily eliminated by hepatic metabolism. Following single oral administration of <sup>14</sup>C-enzalutamide 160 mg, 85% of the radioactivity is recovered by 77 days post dose: 71% is recovered in urine (including only trace amounts of enzalutamide and N-desmethyl enzalutamide), and 14% is recovered in feces (0.4% of dose as unchanged enzalutamide and 1% as N-desmethyl enzalutamide).

The mean apparent clearance (CL/F) of enzalutamide in patients after a single oral dose is 0.56 L/h (range 0.33 to 1.02 L/h).

The mean terminal half-life (t<sub>1/2</sub>) for enzalutamide in patients after a single oral dose is 5.8 days (range 2.8 to 10.2 days). Following a single 160 mg oral dose of enzalutamide in healthy volunteers, the mean terminal t<sub>1/2</sub> for N-desmethyl enzalutamide is approximately 7.8 to 8.6 days.

### **Pharmacokinetics in Special Populations**

#### Renal Impairment:

A population pharmacokinetic analysis (based on pre-existing renal function) was carried out with data from 59 healthy male volunteers and 926 patients with metastatic CRPC enrolled in clinical trials, including 512 with normal renal function (CrCL ≥ 90 mL/min), 332 with mild renal impairment (CrCL 60 to < 90 mL/min), 88 with moderate renal impairment (CrCL 30 to < 60 mL/min), and 1 with severe renal impairment (CrCL < 30 mL/min). The apparent clearance of enzalutamide was similar in patients with pre-existing mild and moderate renal impairment (CrCL 30 to < 90 mL/min) compared to patients and volunteers with normal renal function. The potential effect of severe renal impairment or end stage renal disease on enzalutamide pharmacokinetics cannot be determined as clinical and pharmacokinetic data are available from only one patient [see *Use in Specific Populations* (8.6)].

#### Hepatic Impairment:

The plasma pharmacokinetics of enzalutamide and N-desmethyl enzalutamide were examined in volunteers with normal hepatic function (N = 22) and with pre-existing mild (N = 8, Child-Pugh Class A) moderate (N = 8, Child-Pugh B), or severe (N = 8, Child-Pugh C) hepatic impairment. XTANDI was administered as a single 160 mg dose. The composite AUC of enzalutamide plus N-desmethyl enzalutamide was similar in volunteers with mild, moderate, or severe baseline hepatic impairment compared to volunteers with normal hepatic function. The results are summarized in Figure 1 [see *Use in Specific Populations (8.7)*].

#### Body Weight and Age:

Population pharmacokinetic analyses showed that weight (range: 46 to 163 kg) and age (range: 41 to 92 yr) do not have a clinically meaningful influence on the exposure to enzalutamide.

#### Gender:

The effect of gender on the pharmacokinetics of enzalutamide has not been evaluated.

#### Race:

The majority of XTANDI-treated patients in the randomized clinical trials were Caucasian (85%). Based on pharmacokinetic data from a study in Japanese patients with prostate cancer, there were no clinically relevant differences in exposure between Japanese and Caucasians. There are insufficient data to evaluate potential differences in the pharmacokinetics of enzalutamide in other races.

### **Drug Interactions**

#### Effect of Other Drugs on XTANDI:

In a drug-drug interaction trial in healthy volunteers, a single 160 mg oral dose of XTANDI was administered alone or after multiple oral doses of gemfibrozil (strong CYP2C8 inhibitor). Gemfibrozil increased the  $AUC_{0-\infty}$  of enzalutamide plus N-desmethyl enzalutamide by 2.2-fold with minimal effect on  $C_{max}$ . The results are summarized in Figure 1 [see *Dosage and Administration (2.2) and Drug Interactions (7.1)*].

In a drug-drug interaction trial in healthy volunteers, a single 160 mg oral dose of XTANDI was administered alone or after multiple oral doses of rifampin (strong CYP3A4 and moderate CYP2C8 inducer). Rifampin decreased the  $AUC_{0-\infty}$  of enzalutamide plus N-desmethyl enzalutamide by 37% with no effect on  $C_{max}$ . The results are summarized in Figure 1 [see *Dosage and Administration (2.2) and Drug Interactions (7.2)*].

In a drug-drug interaction trial in healthy volunteers, a single 160 mg oral dose of XTANDI was administered alone or after multiple oral doses of itraconazole (strong CYP3A4 inhibitor). Itraconazole increased the  $AUC_{0-\infty}$  of enzalutamide plus N-desmethyl enzalutamide by 1.3-fold with no effect on  $C_{max}$ . The results are summarized in Figure 1.

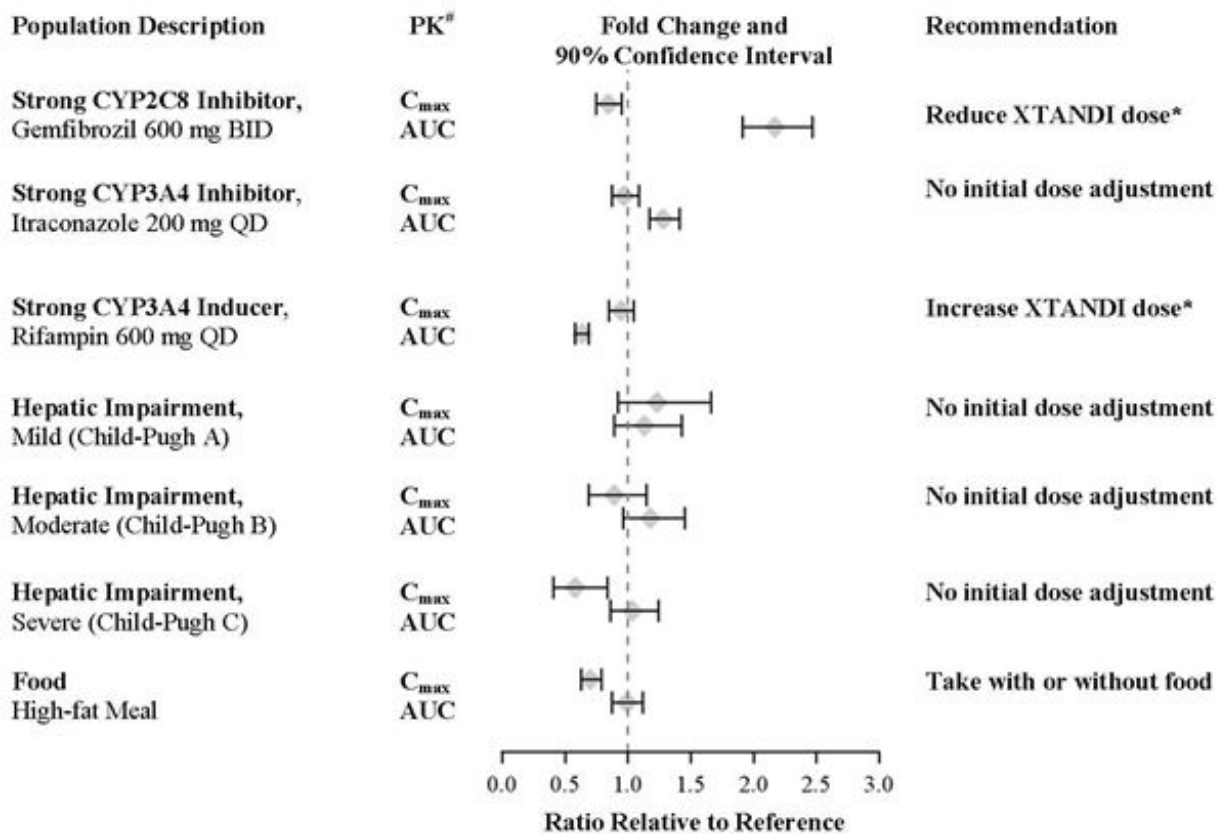


Figure 1. Effects of Other Drugs and Intrinsic/Extrinsic Factors on XTANDI

<sup>#</sup> PK parameters (C<sub>max</sub> and AUC<sub>0-inf</sub>) are for enzalutamide plus N-desmethyl enzalutamide, except in the food-effect trial, where they are for enzalutamide alone.

\* See Dosage and Administration (2.2).

#### Effect of XTANDI on Other Drugs:

In an *in vivo* phenotypic cocktail drug-drug interaction trial in patients with metastatic CRPC, a single oral dose of the CYP probe substrate cocktail (for CYP2C8, CYP2C9, CYP2C19, and CYP3A4) was administered before and concomitantly with XTANDI (following at least 55 days of dosing at 160 mg daily). The results are summarized in Figure 2. Results showed that *in vivo*, at steady state, XTANDI is a strong CYP3A4 inducer and a moderate CYP2C9 and CYP2C19 inducer [see *Drug Interactions (7.3)*]. XTANDI did not cause clinically meaningful changes in exposure to the CYP2C8 substrate.

In an *in vivo* phenotypic cocktail drug-drug interaction trial in patients with CRPC, a single oral dose of the CYP probe substrate cocktail for CYP1A2 and CYP2D6 was administered before and concomitantly with XTANDI (following at least 49 days of dosing at 160 mg daily). The results are summarized in Figure 2. Results showed that *in vivo*, at steady state, XTANDI did not cause clinically meaningful changes in exposure to the CYP1A2 or CYP2D6 substrates.

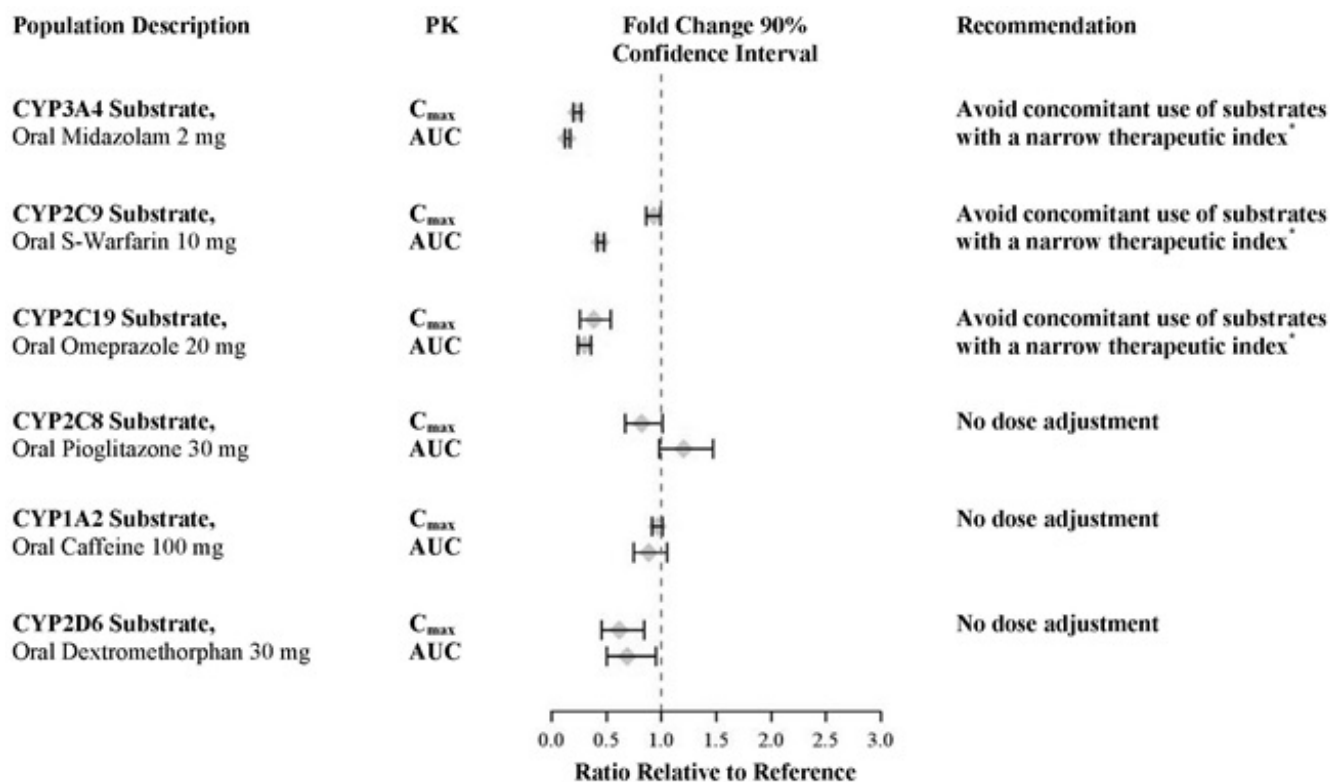


Figure 2. Effect of XTANDI on Other Drugs

\*See Drug Interactions (7.3).

*In vitro*, enzalutamide, N-desmethyl enzalutamide, and the major inactive carboxylic acid metabolite caused direct inhibition of multiple CYP enzymes including CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6, and CYP3A4/5; however, subsequent clinical data showed that XTANDI is an inducer of CYP2C9, CYP2C19, and CYP3A4 and had no clinically meaningful effect on CYP2C8 (see Figure 2). *In vitro*, enzalutamide caused time-dependent inhibition of CYP1A2.

*In vitro* studies showed that enzalutamide induces CYP2B6 and CYP3A4 and does not induce CYP1A2 at therapeutically relevant concentrations.

*In vitro*, enzalutamide, N-desmethyl enzalutamide, and the major inactive carboxylic acid metabolite are not substrates for human P-glycoprotein. *In vitro*, enzalutamide and N-desmethyl enzalutamide are inhibitors of human P-glycoprotein, while the major inactive carboxylic acid metabolite is not.

*In vitro*, enzalutamide and N-desmethyl enzalutamide do not appear to be substrates of human breast cancer resistance protein (BCRP); however, enzalutamide and N-desmethyl enzalutamide are inhibitors of human BCRP at clinically relevant concentrations.

## 13 NONCLINICAL TOXICOLOGY

### 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Long-term animal studies have not been conducted to evaluate the carcinogenic potential of enzalutamide.

Enzalutamide did not induce mutations in the bacterial reverse mutation (Ames) assay and was not genotoxic in either the *in vitro* mouse lymphoma thymidine kinase (Tk) gene mutation assay or the *in vivo* mouse micronucleus assay.

Based on nonclinical findings in repeat-dose toxicology studies, which were consistent with the pharmacological activity of enzalutamide, male fertility may be impaired by treatment with XTANDI. In a 26-week study in rats, atrophy of the prostate and seminal vesicles was observed at  $\geq 30$  mg/kg/day

(equal to the human exposure based on AUC). In 4-, 13-, and 39-week studies in dogs, hypospermatogenesis and atrophy of the prostate and epididymides were observed at  $\geq 4$  mg/kg/day (0.3 times the human exposure based on AUC).

## 14 CLINICAL STUDIES

The efficacy and safety of XTANDI in 3291 patients with metastatic CRPC were demonstrated in three randomized, multicenter clinical trials. All patients continued on GnRH therapy or had prior bilateral orchiectomy. Patients were allowed, but not required, to continue or initiate glucocorticoids.

### Study 1: XTANDI versus Placebo in Metastatic CRPC Following Chemotherapy

A total of 1199 patients who had received prior docetaxel-based chemotherapy were randomized 2:1 to receive either XTANDI orally at a dose of 160 mg once daily (N = 800) or placebo orally once daily (N = 399). Study treatment continued until disease progression (evidence of radiographic progression, a skeletal-related event, or clinical progression), initiation of new systemic antineoplastic treatment, unacceptable toxicity, or withdrawal. Patients with a previous history of seizure, taking medicines known to decrease the seizure threshold, or with other risk factors for seizure were not eligible [see *Warnings and Precautions* (5.1)].

The following patient demographics and baseline disease characteristics were balanced between the treatment arms. The median age was 69 years (range 41-92) and the racial distribution was 92.7% Caucasian, 3.9% Black, 1.1% Asian, and 2.1% Other. Ninety-two percent of patients had an ECOG performance status score of 0-1 and 28% had a mean Brief Pain Inventory score of  $\geq 4$ . Ninety-one percent of patients had metastases in bone and 23% had visceral involvement in the lung and/or liver. Fifty-nine percent of patients had radiographic evidence of disease progression and 41% had PSA-only progression on study entry. All patients had received prior docetaxel-based therapy and 24% had received two cytotoxic chemotherapy regimens. During the trial, 48% of patients on the XTANDI arm and 46% of patients on the placebo arm received glucocorticoids.

A statistically significant improvement in overall survival was demonstrated at the pre-specified interim analysis at the time of 520 deaths in patients on the XTANDI arm compared to patients on the placebo arm (Table 4 and Figure 3).

**Table 4. Overall Survival of Patients Treated with Either XTANDI or Placebo in Study 1**

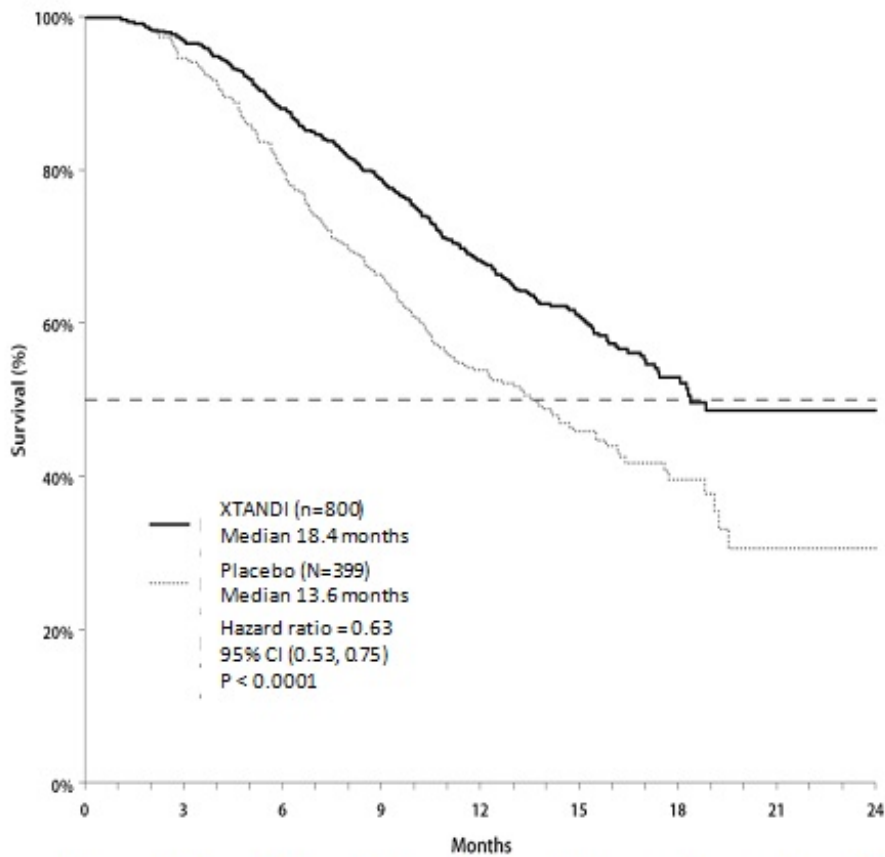
	<b>XTANDI N = 800</b>	<b>Placebo N = 399</b>
Number of Deaths (%)	308 (38.5%)	212 (53.1%)
Median Survival, months (95% CI)	18.4 (17.3, NR)	13.6 (11.3, 15.8)
P-value <sup>a</sup>	< 0.0001	
Hazard Ratio (95% CI) <sup>b</sup>	0.63 (0.53, 0.75)	

<sup>a</sup>) P-value is derived from a log-rank test stratified by baseline ECOG performance status score (0-1 vs. 2) and mean baseline pain score (BPI-SF score < 4 vs.  $\geq 4$ )

<sup>b</sup>) Hazard Ratio is derived from a stratified proportional hazards model. Hazard ratio <1 favors XTANDI

NR denotes "not reached".





XTANDI	800	775	701	627	400	211	72	7	0
Placebo	399	376	317	263	167	81	33	3	0

**Figure 3. Kaplan-Meier Overall Survival Curves in Study 1**

## Study 2: XTANDI versus Placebo in Chemotherapy-naïve Metastatic CRPC

In Study 2, 1717 chemotherapy-naïve patients were randomized 1:1 to receive either XTANDI orally at a dose of 160 mg once daily (N = 872) or placebo orally once daily (N = 845). Patients with visceral metastases, patients with a history of mild to moderate heart failure (NYHA class I or II), and patients taking medications associated with lowering the seizure threshold were allowed. Patients with a previous history of seizure or a condition that might predispose to seizure and patients with moderate or severe pain from prostate cancer were excluded. Study treatment continued until disease progression (evidence of radiographic progression, a skeletal-related event, or clinical progression) and the initiation of a cytotoxic chemotherapy or an investigational agent, unacceptable toxicity, or withdrawal. Overall survival and radiographic progression-free survival (rPFS) were assessed. Radiographic progression was assessed with the use of sequential imaging and was defined by bone scan identification of 2 or more new bone lesions with confirmation (Prostate Cancer Clinical Trials Working Group 2 criteria) and/or Response Evaluation Criteria in Solid Tumors (RECIST v 1.1) criteria for progression of soft tissue lesions. The primary analysis of rPFS utilized centrally reviewed radiographic assessment of progression.

Patient demographics and baseline disease characteristics were balanced between the treatment arms at entry. The median age was 71 years (range 42-93) and the racial distribution was 77% Caucasian, 10% Asian, 2% Black and 11% Other. The ECOG performance status score was 0 for 68% of patients, and 1 for 32% of patients. Baseline pain assessment was 0-1 (asymptomatic) in 67% of patients, and 2-3 (mildly symptomatic) in 32% of patients as defined by the Brief Pain Inventory Short Form (worst pain over past 24 hours at study entry). Fifty-four percent of patients had radiographic evidence of disease progression and 43% had PSA-only progression. Twelve percent of patients had visceral (lung and/or liver) disease involvement. During the study, 27% of patients on the XTANDI arm and 30% of patients on the placebo arm received glucocorticoids for varying reasons.

A statistically significant improvement in overall survival was demonstrated at the pre-specified interim analysis, conducted after 540 deaths in patients treated with XTANDI compared to those treated with placebo (Table 5). Forty percent of XTANDI-treated and 70% of placebo-treated patients received subsequent therapies for metastatic CRPC that may prolong overall survival. An updated survival analysis was conducted when 784 deaths were observed. The median follow-up time was 31 months. Results from this analysis were consistent with those from the pre-specified interim analysis (Table 6, Figure 4). At the updated analysis, 52% of XTANDI-treated and 81% of placebo-treated patients had received subsequent therapies that may prolong overall survival in metastatic CRPC. XTANDI was used as a subsequent therapy in 2% of XTANDI-treated patients and 29% of placebo-treated patients.

**Table 5. Overall Survival of Patients Treated with Either XTANDI or Placebo in Study 2**

	<b>XTANDI N = 872</b>	<b>Placebo N = 845</b>
<b>Pre-specified Interim Analysis<sup>a</sup></b>		
Number of Deaths (%)	241 (28%)	299 (35%)
Median Survival, months (95% CI)	32.4 (30.1, NR)	30.2 (28.0, NR)
P-value <sup>b</sup>	< 0.0001	
Hazard Ratio (95% CI) <sup>c</sup>	0.71 (0.60, 0.84)	
<b>Updated Survival Analysis<sup>d</sup></b>		
Number of Deaths (%)	368 (42%)	416 (49%)
Median Survival, months (95% CI)	35.3 (32.2, NR)	31.3 (28.8, 34.2)
Hazard Ratio (95% CI) <sup>c</sup>	0.77 (0.67, 0.88)	

a) The data cutoff date is 16 Sep 2013

b) P-value is derived from an unstratified log-rank test.

c) Hazard ratio is derived from an unstratified proportional hazards model. Hazard ratio < 1 favors XTANDI.

d) The data cutoff date is 1 Jun 2014. The planned number of deaths for the final overall survival analysis was ≥765.

NR denotes “not reached”.

**Figure 4. Kaplan-Meier Overall Survival Curves in Study 2**

A statistically significant improvement in rPFS was demonstrated in patients treated with XTANDI compared to patients treated with placebo (Table 6, Figure 5).

**Table 6. Radiographic Progression-free Survival of Patients Treated with Either XTANDI or Placebo in Study 2**

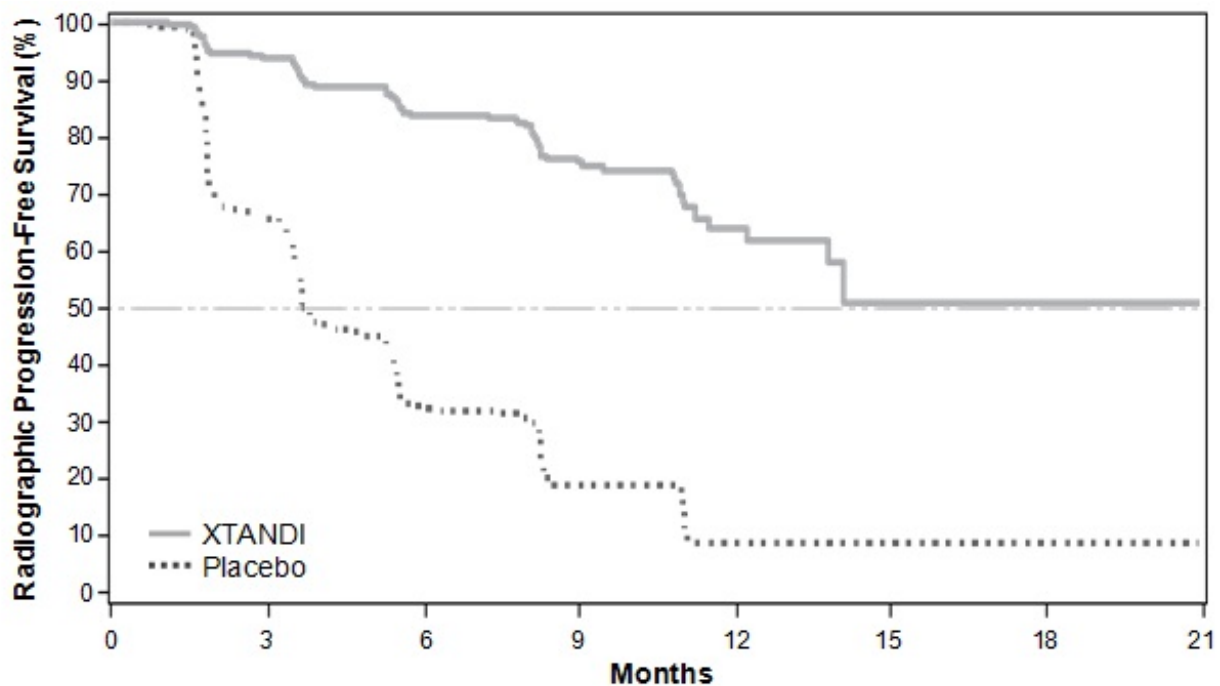
	<b>XTANDI N = 832</b>	<b>Placebo N = 801</b>
Number of Progression or Deaths (%)	118 (14%)	320 (40%)
Median rPFS (months) (95% CI)	NR (13.8, NR)	3.7 (3.6, 4.6)
P-value <sup>a</sup>	< 0.0001	
Hazard Ratio (95% CI) <sup>b</sup>	0.17 (0.14, 0.21)	

a) P-value is derived from an unstratified log-rank test

b) Hazard Ratio is derived from an unstratified proportional hazards model. Hazard ratio <1 favors XTANDI

NR denotes “not reached”.

Note: As of the cutoff date for the rPFS analysis, 1633 patients had been randomized.



**Patients at risk**

<b>XTANDI</b>	832	501	240	119	32	5	1	0
<b>Placebo</b>	801	280	65	12	2	0	0	0

**Figure 5. Kaplan-Meier Curves for Duration of Radiographic Progression-free Survival in Study 2**

Time to initiation of cytotoxic chemotherapy was prolonged after XTANDI treatment, with a median of 28.0 months for patients on the XTANDI arm versus a median of 10.8 months for patients on the placebo arm [HR=0.35 (95% CI: 0.30, 0.40),  $p < 0.0001$ ].

The median time to first skeletal-related event was 31.1 months for patients on the XTANDI arm versus 31.3 months for patients on the placebo arm [HR = 0.72 (95% CI: 0.61, 0.84),  $p < 0.0001$ ]. A skeletal-related event was defined as radiation therapy or surgery to bone for prostate cancer, pathologic bone fracture, spinal cord compression, or change of antineoplastic therapy to treat bone

pain.

### Study 3: XTANDI versus Bicalutamide in Chemotherapy-naïve Metastatic CRPC

Study 3 was conducted in 375 chemotherapy-naïve patients who were randomized 1:1 to receive either XTANDI orally at a dose of 160 mg once daily (N = 184) or bicalutamide orally at a dose of 50 mg once daily (N = 191). Patients with a previous history of seizure or a condition that might predispose to seizure and patients with moderate to severe pain from prostate cancer were excluded. Patients could have received prior bicalutamide, but those whose disease had progressed on prior antiandrogen therapy (e.g. bicalutamide) were excluded. Study treatment continued until disease progression (evidence of radiographic progression, a skeletal-related event), the initiation of subsequent antineoplastic agent, unacceptable toxicity, or withdrawal. Radiographic disease progression was assessed by Independent Central Review (ICR) using the Prostate Cancer Clinical Trials Working Group 2 criteria and/or Response Evaluation Criteria in Solid Tumors (RECIST v 1.1) criteria for progression of soft tissue lesions. Radiographic progression-free survival (rPFS) was defined as the time from randomization to the first objective evidence of radiographic progression as assessed by ICR or death, whichever occurred first.

Patient demographics and baseline disease characteristics were balanced between the treatment arms at entry. The median age was 71 years (range 48-96) and the racial distribution was 93% Caucasian, 5% Black, 1% Asian and 1% Other. The ECOG performance status score was 0 for 74% of patients and 1 for 26% of patients. Baseline pain assessment was 0-1 (asymptomatic) in 58% of patients, and 2-3 (mildly symptomatic) in 36% of patients as defined by the Brief Pain Inventory Short Form Question 3 (worst pain over past 24 hours at study entry). Ninety-eight percent of patients had objective evidence of disease progression at study entry. Forty-six percent of patients had received prior treatment with bicalutamide while no patients received prior treatment with enzalutamide.

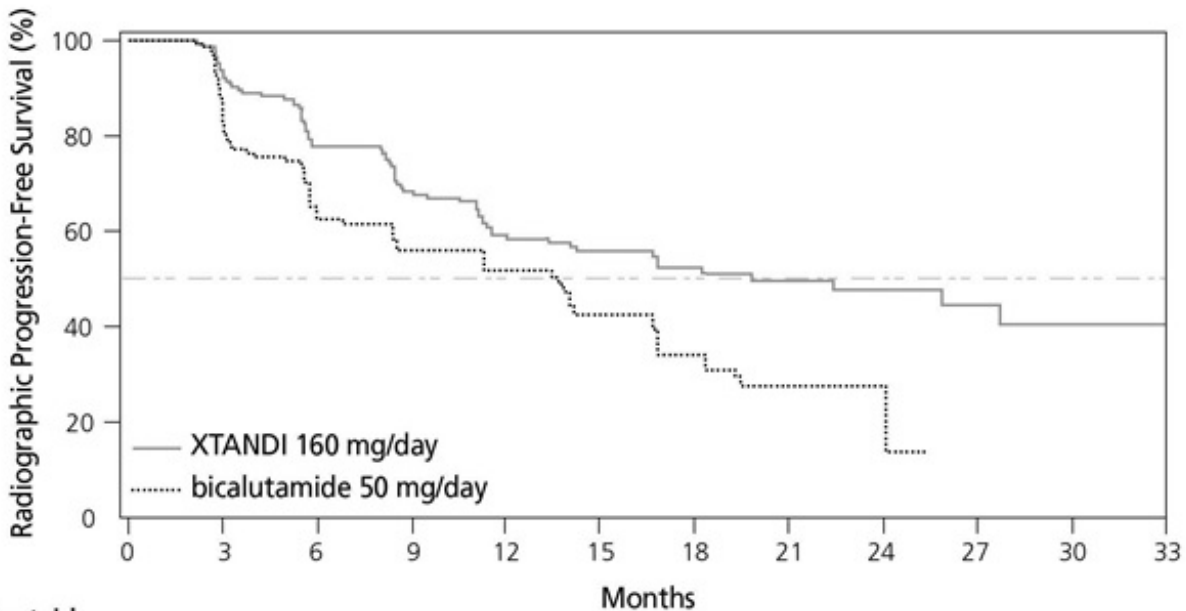
An improvement in rPFS was demonstrated in patients treated with XTANDI compared to patients treated with bicalutamide (Table 7, Figure 6).

**Table 7: Radiographic Progression-free Survival of Patients in Study 3**

	<b>XTANDI N = 184</b>	<b>Bicalutamide N = 191</b>
Number of Progression or Deaths (%)	72 (39%)	74 (39%)
Median rPFS (months) (95% CI)	19.5 (11.8, NR)	13.4 (8.2, 16.4)
Hazard Ratio (95% CI) <sup>a</sup>	0.60 (0.43, 0.83)	

<sup>a</sup>) Hazard Ratio is derived from an unstratified proportional hazards model. Hazard ratio <1 favors XTANDI

NR denotes “not reached”.



<u>Patients at risk</u>		0	3	6	9	12	15	18	21	24	27	30	33
XTANDI	184	145	110	90	71	56	41	28	17	11	6	4	
bicalutamide	191	102	66	47	33	25	12	5	1	0	0	0	

**Figure 6. Kaplan-Meier Curves of Radiographic Progression-free Survival in Study 3**

## 16 HOW SUPPLIED/STORAGE AND HANDLING

- XTANDI (enzalutamide) 40 mg capsules are supplied as white to off-white oblong soft gelatin capsules imprinted in black ink with ENZ. XTANDI capsules are available in the following package sizes:
  - Bottles of 120 capsules (NDC 0469-0125-99)

Recommended storage: Store XTANDI capsules at 20°C to 25°C (68°F to 77°F) in a dry place and keep the container tightly closed. Excursions permitted from 15°C to 30°C (59°F to 86°F).

## 17 PATIENT COUNSELING INFORMATION

**Advise the patient to read the FDA-approved patient labeling (Patient Information).**

- Instruct patients to take their dose at the same time each day (once daily). XTANDI can be taken with or without food. Each capsule should be swallowed whole. Do not chew, dissolve, or open the capsules.
- Inform patients receiving GnRH therapy that they need to maintain this treatment during the course of treatment with XTANDI.
- Inform patients that XTANDI has been associated with an increased risk of seizure. Discuss conditions that may predispose to seizures and medications that may lower the seizure threshold. Advise patients of the risk of engaging in any activity where sudden loss of consciousness could cause serious harm to themselves or others. Inform patients to contact their physician right away if they have loss of consciousness or seizure.
- Inform patients to contact their physician right away if they experience rapidly worsening symptoms possibly indicative of PRES such as seizure, headache, decreased alertness, confusion, reduced eyesight, or blurred vision.
- Inform patients that they should not interrupt, modify the dose, or stop XTANDI without first

consulting their physician. Inform patients that if they miss a dose, then they should take it as soon as they remember. If they forget to take the dose for the whole day, then they should take their normal dose the next day. They should not take more than their prescribed dose per day.

- Apprise patients of the most common side effects associated with XTANDI: asthenia/fatigue, back pain, decreased appetite, constipation, arthralgia, diarrhea, hot flush, upper respiratory tract infection, peripheral edema, dyspnea, musculoskeletal pain, weight decreased, headache, hypertension, and dizziness/vertigo. Direct the patient to a complete list of adverse drug reactions in PATIENT INFORMATION.
- Inform patients that XTANDI may cause infections, falls and fall-related injuries, and hypertension.
- Inform patients that XTANDI can be harmful to a developing fetus. Advise male patients with female partners of reproductive potential to use effective contraception during treatment and for 3 months after the last dose of XTANDI. Advise male patients to use a condom if having sex with a pregnant woman [see *Use in Specific Populations (8.3)*].

**Manufactured for and Distributed by:** Astellas Pharma US, Inc., Northbrook, IL 60062

**Marketed by:**

Astellas Pharma US, Inc., Northbrook, IL 60062

Medivation, Inc., San Francisco, CA 94105

15I074-XTA-SPL

**Rx Only**

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**PATIENT INFORMATION**

**XTANDI® (ex TAN dee)**

**(enzalutamide)**

**capsules**

**What is XTANDI®?**

XTANDI is a prescription medicine used to treat men with prostate cancer that no longer responds to a medical or surgical treatment that lowers testosterone and that has spread to other parts of the body.

It is not known if XTANDI is safe and effective in children.

**Who should not take XTANDI?**

XTANDI is not for use in women.

Do not take XTANDI if you are pregnant or may become pregnant. XTANDI can harm your unborn baby.

**What should I tell my healthcare provider before taking XTANDI?**

**Before you take XTANDI, tell your healthcare provider if you:**

- have a history of seizures, brain injury, stroke, or brain tumors
- have any other medical conditions
- have a partner who is pregnant or may become pregnant. Men who are sexually active with a pregnant woman must use a condom during and for 3 months after treatment with XTANDI. If your sexual partner may become pregnant, a condom and another form of effective birth control must be

used during and for 3 months after treatment. Talk with your healthcare provider if you have questions about birth control. See **“Who should not take XTANDI?”**

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

You should not start or stop any medicine before you talk with the healthcare provider that prescribed XTANDI.

Know the medicines you take. Keep a list of them with you to show your healthcare provider and pharmacist when you get a new medicine.

### **How should I take XTANDI?**

- Take XTANDI exactly as your healthcare provider tells you.
- Take your prescribed dose of XTANDI one time a day, at the same time each day.
- Your healthcare provider may change your dose if needed.
- Do not change or stop taking your prescribed dose of XTANDI without talking with your healthcare provider first.
- XTANDI can be taken with or without food.
- Swallow XTANDI capsules whole. Do not chew, dissolve, or open the capsules.
- If you miss a dose of XTANDI, take your prescribed dose as soon as you remember that day. If you miss your daily dose, take your prescribed dose at your regular time the next day. Do not take more than your prescribed dose of XTANDI in one day.

If you take too much XTANDI, call your healthcare provider or go to the nearest emergency room right away. You may have an increased risk of seizure if you take too much XTANDI.

### **What are the possible side effects of XTANDI?**

#### **XTANDI may cause serious side effects including:**

- **Seizure.** If you take XTANDI you may be at risk of having a seizure. You should avoid activities where a sudden loss of consciousness could cause serious harm to yourself or others. Tell your healthcare provider right away if you have loss of consciousness or seizure. Your healthcare provider will stop XTANDI if you have a seizure during treatment.
- **Posterior Reversible Encephalopathy Syndrome (PRES).** If you take XTANDI you may be at risk of developing a condition involving the brain called PRES. Tell your healthcare provider right away if you have a seizure or quickly worsening symptoms such as headache, decreased alertness, confusion, reduced eyesight, blurred vision or other visual problems. Your healthcare provider will do a test to check for PRES. Your healthcare provider will stop XTANDI if you develop PRES.

#### **The most common side effects of XTANDI include:**

- 
- weakness or feeling more tired than usual
  - back pain
  - decreased appetite
  - constipation
  - joint pain
  - diarrhea
  - swelling in your hands, arms, legs, or feet
  - shortness of breath
  - muscle and bone pain
  - weight loss
  - headache
  - high blood pressure

- hot flashes
  - upper respiratory tract infection
  - dizziness
  - a feeling that you or things around you are moving or spinning (vertigo)
- 

XTANDI may cause infections, falls and injuries from falls. Tell your healthcare provider if you have signs or symptoms of an infection or if you fall.

Tell your healthcare provider if you have any side effect that bothers you or that does not go away.

These are not all the possible side effects of XTANDI. For more information, ask your healthcare provider or pharmacist.

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

### **How should I store XTANDI?**

- Store XTANDI between 68°F to 77°F (20°C to 25°C).
- Keep XTANDI capsules dry and in a tightly closed container.

### **Keep XTANDI and all medicines out of the reach of children.**

### **General information about XTANDI.**

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use XTANDI for a condition for which it was not prescribed. Do not give XTANDI to other people, even if they have the same symptoms that you have. It may harm them.

This Patient Information leaflet summarizes the most important information about XTANDI. If you would like more information, talk with your healthcare provider. You can ask your healthcare provider or pharmacist for information about XTANDI that is written for health professionals.

For more information go to [www.Xtandi.com](http://www.Xtandi.com) or call 1-800-727-7003.

### **What are the ingredients in XTANDI?**

**Active ingredient:** enzalutamide

**Inactive ingredients:** caprylocaproyl polyoxylglycerides, butylated hydroxyanisole, butylated hydroxytoluene, gelatin, sorbitol sorbitan solution, glycerin, purified water, titanium dioxide, black iron oxide

Marketed by: Astellas Pharma US, Inc., Northbrook, IL 60062 Medivation Inc., San Francisco, CA 94105

15I074-XTA-SPL

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This Patient Information has been approved by the U.S. Food and Drug Administration. Revised: 10/2016

**PACKAGE/LABEL PRINCIPAL DISPLAY PANEL**



**Dosage:** See package insert for dosing information.

NDC 0469-0125-99

Rx Only



**Xtandi**  
(enzalutamide)  
capsules  
**40 mg**

**Recommended storage:**  
Store XTANDI capsules at 20°C to 25°C (68°F to 77°F) in a dry place and keep the container tightly closed. Excursions permitted from 15°C to 30°C (59°F to 86°F).

**120 Capsules**

Manufactured by  
**Catalent Pharma Solutions, LLC** for  
**Astellas Pharma US, Inc.**,  
Northbrook, IL 60062

111607 15L111-XTA



**Swallow capsules whole.  
Do not chew, dissolve,  
or open the capsules.**

Keep this and all medication out of the reach of children.

NDC 0469-0125-99

Rx Only

Xtandi®  
(enzalutamide)  
capsules

40 mg

Swallow capsules whole.  
Do not chew, dissolve, or open the capsules.

Keep this and all medication out of reach of children.

120 Capsules

Manufactured by  
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Astellas Pharma US, Inc.,  
Northbrook, IL 60062

111607 15L111-XTA

**XTANDI**

enzalutamide capsule

**Product Information**

<b>Product Type</b>	HUMAN PRESCRIPTION DRUG	<b>Item Code (Source)</b>	NDC:0469-0125
<b>Route of Administration</b>	ORAL		

**Active Ingredient/Active Moiety**

Ingredient Name	Basis of Strength	Strength
ENZALUTAMIDE (UNII: 93T0T9GKNU) (ENZALUTAMIDE - UNII:93T0T9GKNU)	ENZALUTAMIDE	40 mg

**Product Characteristics**

<b>Color</b>	WHITE (white to off-white)	<b>Score</b>	no score
<b>Shape</b>	CAPSULE	<b>Size</b>	12mm
<b>Flavor</b>		<b>Imprint Code</b>	ENZ
<b>Contains</b>			

**Packaging**

#	Item Code	Package Description	Marketing Start Date	Marketing End Date
1	NDC:0469-0125-99	1 in 1 CARTON	08/31/2012	
1		120 in 1 BOTTLE; Type 0: Not a Combination Product		

**Marketing Information**

Marketing Category	Application Number or Monograph Citation	Marketing Start Date	Marketing End Date
NDA	NDA203415	08/31/2012	

**Labeler** - Astellas Pharma US, Inc. (605764828)

Revised: 10/2016

Astellas Pharma US, Inc.