

*Persistent Cushing's disease (CD) can be an arduous journey through symptoms, surgery, and treatment failure<sup>1-4</sup>*

# DESTINATION NORMALIZATION

ISTURISA helps put your patients on a straighter path toward long-term cortisol normalization.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

*Set a course toward normalized cortisol*

**ISTURISA is a cortisol synthesis inhibitor indicated for the treatment of adult patients with Cushing's disease for whom pituitary surgery is not an option or has not been curative.<sup>5</sup>**

**ISTURISA is an oral therapy<sup>5</sup>:**

- The first FDA-approved therapy that blocks the enzyme 11 $\beta$ -hydroxylase to normalize cortisol in Cushing's disease patients
- Demonstrated an expected and manageable safety profile in clinical trials

## **IMPORTANT SAFETY INFORMATION**

### **Warnings and Precautions**

- **Hypocortisolism:** ISTURISA lowers cortisol levels and can lead to hypocortisolism and sometimes life-threatening adrenal insufficiency. Lowering of cortisol can cause nausea, vomiting, fatigue, abdominal pain, loss of appetite, and dizziness. Significant lowering of serum cortisol may result in hypotension, abnormal electrolyte levels, and hypoglycemia.

Hypocortisolism can occur at any time during ISTURISA treatment. Evaluate patients for precipitating causes of hypocortisolism (infection, physical stress, etc). Monitor 24-hr urine free cortisol, serum or plasma cortisol, and patient's signs and symptoms periodically during ISTURISA treatment.

**Please see Important Safety Information throughout and accompanying full Prescribing Information.**

*In Cushing's disease (CD)*

## Persistent elevations in cortisol negatively impact morbidity, mortality, and quality of life<sup>1-3</sup>

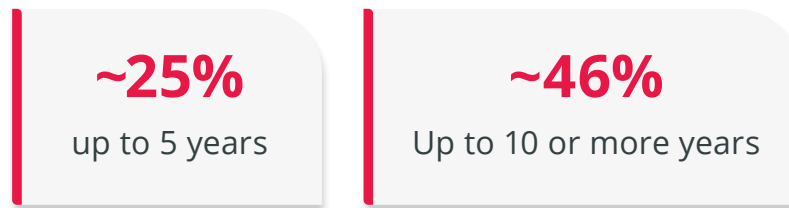
**Up to 70% of Cushing's syndrome is identifiable as Cushing's disease (caused by an ACTH-secreting pituitary adenoma)<sup>1,6</sup>**

Pituitary surgery is the recommended first-line treatment for CD, but recurrence after surgery is common<sup>4,7</sup>

- The chances of disease recurrence exist following pituitary surgery<sup>8,9</sup>
- Patients who are ineligible for or who choose to refuse pituitary surgery may continue to experience hypercortisolism<sup>10</sup>

**The high incidence of CD recurrence necessitates annual clinical and biochemical follow up<sup>4,9</sup>**

### RECURRENCE RATES<sup>8,9</sup>



**Recent expert consensus concludes diagnosis and treatment of recurrent CD must not be delayed<sup>11</sup>**

UNCONTROLLED CHRONIC HYPERCORTISOLISM LEADS TO ELEVATED RISKS OF MULTISYSTEM MORBIDITY AND MORTALITY<sup>4,12</sup>

**~3.5-5X higher mortality risk than in the general population<sup>13</sup>**

*Pharmacologic therapy is an appropriate treatment choice for patients for whom surgery is not an option or has failed to effectively normalize cortisol<sup>4</sup>*

*ACTH, adrenocorticotropic hormone; CD, Cushing's disease.*



# The clinical presentation of hypercortisolism can present with varying phenotypes<sup>14</sup>

Classical discriminatory signs of hypercortisolism in Cushing's are often accompanied by other non-discriminatory symptoms or comorbidities<sup>14</sup>

## SIGNS AND SYMPTOMS

### Hair loss<sup>15</sup>

- PLETHORA<sup>15,16</sup>

### Hirsutism<sup>15-17</sup>

### Dorsocervical fat pad<sup>15-17</sup>

### Supraclavicular fat pad<sup>15-17</sup>

- PURPURA WITH NO OBVIOUS TRAUMA<sup>15,16</sup>

### Central obesity, unexplained weight gain<sup>15-17</sup>

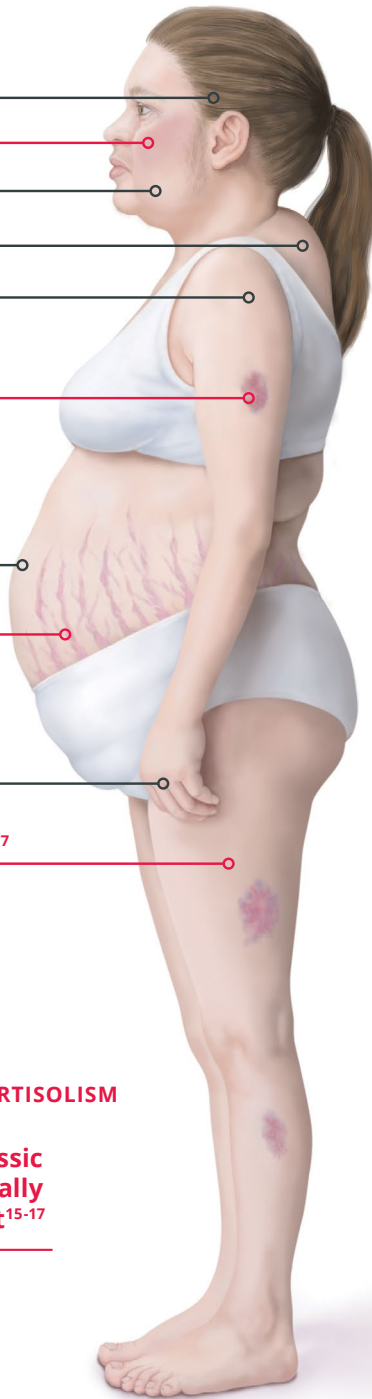
- REDDISH-PURPLE STRIAE<sup>15-17</sup>

### Thin skin<sup>15-17</sup>

- PROXIMAL MUSCLE WEAKNESS<sup>15-17</sup>

### • DISCRIMINATORY SIGNS OF HYPERCORTISOLISM

Clinical suspicion of CD may arise without a complete picture of classic discriminatory symptoms, especially if other comorbidities are present<sup>15-17</sup>



## COMORBIDITIES

Anxiety or depression<sup>15,16</sup>

Obstructive sleep apnea<sup>18</sup>

Fatigue<sup>15,19</sup>

Insomnia<sup>14,17</sup>

Unexplained osteoporosis<sup>15,16</sup>

Insulin resistance<sup>17</sup>

Carbohydrate intolerance<sup>17</sup>

Diabetes mellitus type 2<sup>17</sup>

Hypertension<sup>16,17</sup>

Dyslipidemia<sup>14,17</sup>

Irregular menses<sup>15</sup>

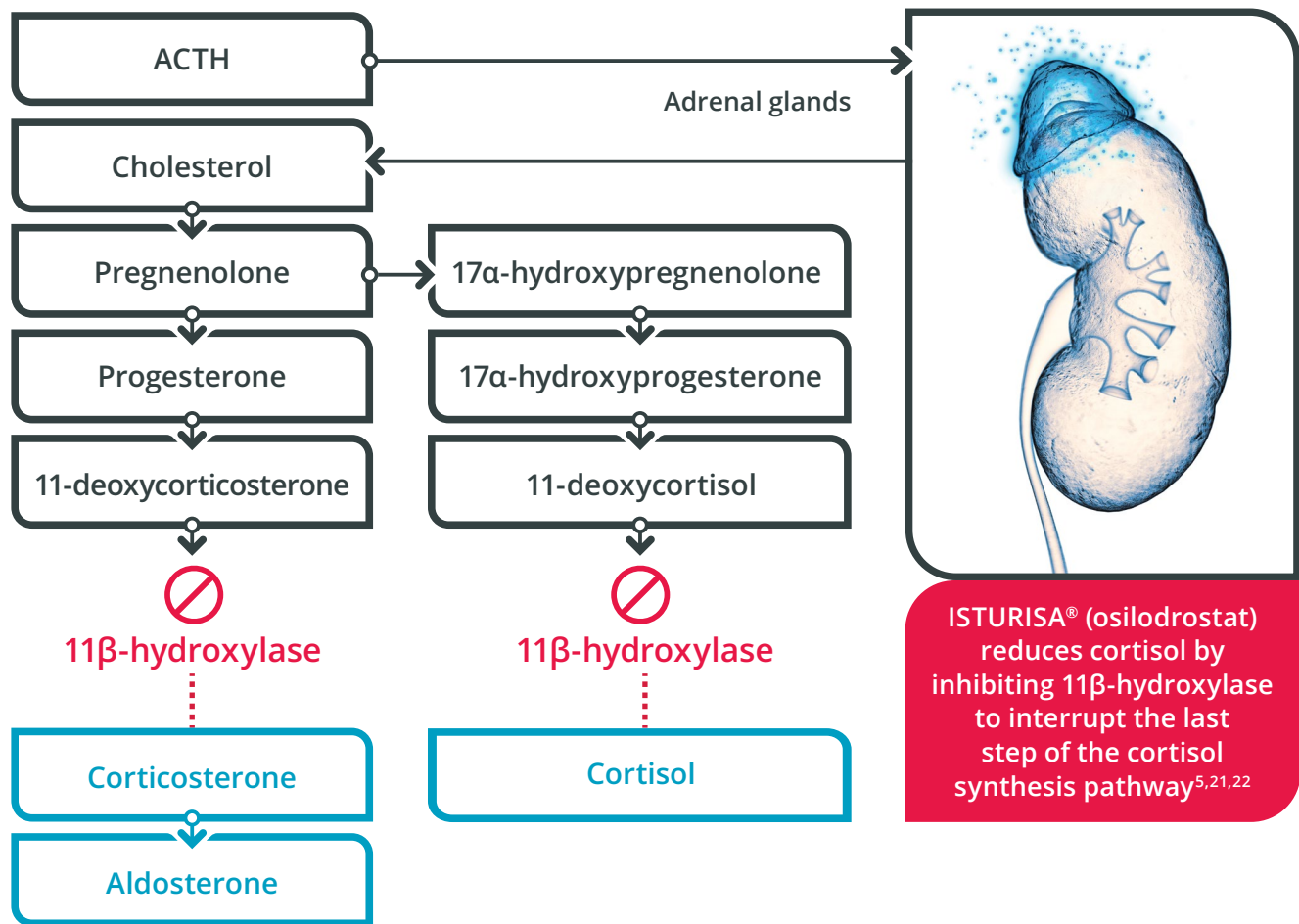
Low libido<sup>16</sup>

*Normalizing cortisol secretion may be an effective way to address comorbidities related to hypercortisolism<sup>20</sup>*

# ISTURISA is a targeted cortisol synthesis inhibitor<sup>5,21</sup>

The first FDA-approved therapy for Cushing's disease (CD) that blocks the enzyme 11 $\beta$ -hydroxylase to normalize cortisol levels<sup>5</sup>

- A pituitary adenoma leads to increased ACTH



- Changes in the levels of 11-deoxycortisol and ACTH were dose-dependent<sup>5</sup>

ACTH, adrenocorticotropic hormone.

Enzymatic inhibition of 11 $\beta$ -hydroxylase is reversible, and the effects of ISTURISA can be reversed or decreased upon treatment discontinuation or tapering<sup>5,23</sup>

## Important Safety Information (continued)

### Warnings and Precautions (continued)

- **Hypocortisolism (continued):** Decrease or temporarily discontinue ISTURISA if urine free cortisol levels fall below the target range, there is a rapid decrease in cortisol levels, and/or patients report symptoms of hypocortisolism. Stop ISTURISA and administer exogenous glucocorticoid replacement therapy if serum or plasma cortisol levels are below target range and patients have symptoms of adrenal insufficiency. After ISTURISA discontinuation, cortisol suppression may persist beyond the 4-hour half-life of ISTURISA. Please see section 5.1 of full Prescribing Information.

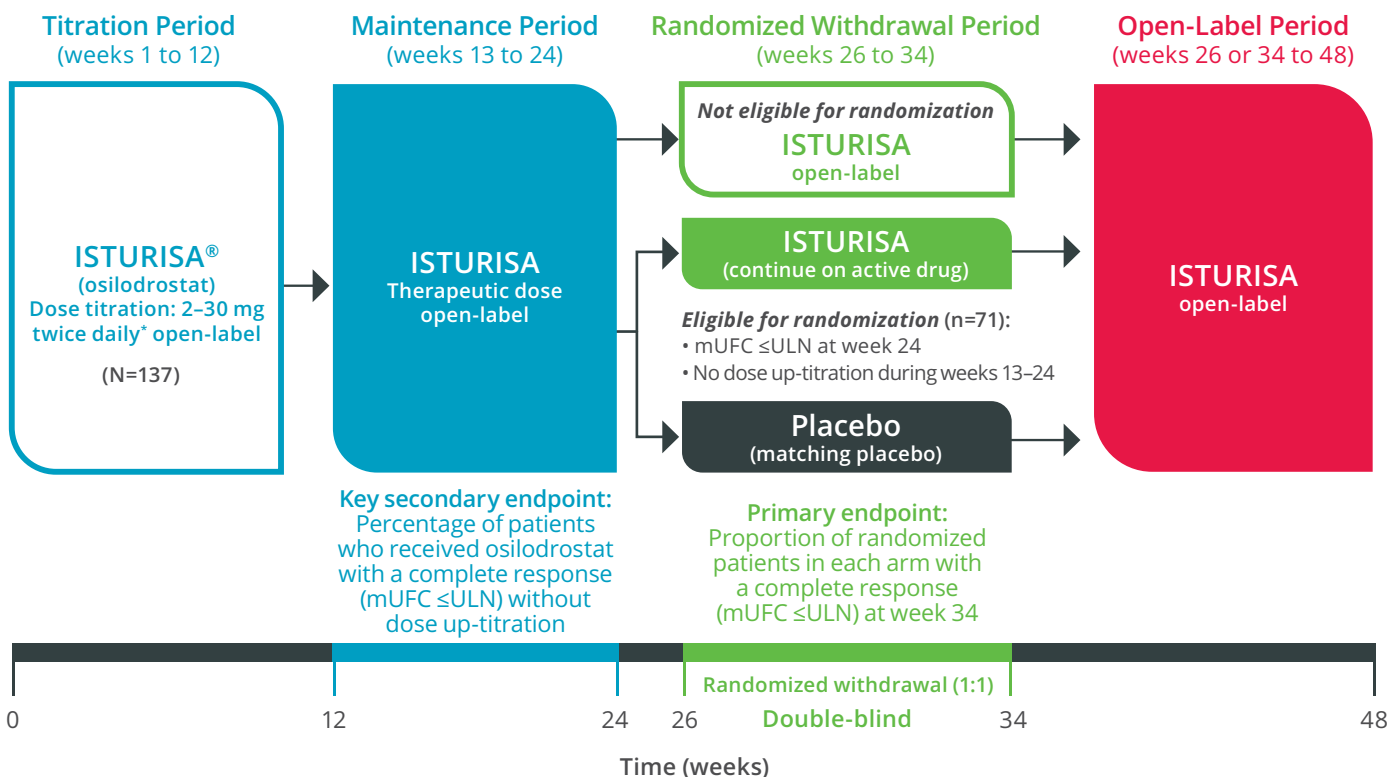
Educate patients on the symptoms associated with hypocortisolism and advise them to contact a healthcare provider if they occur.

**Please see Important Safety Information throughout and accompanying full Prescribing Information.**

 **Isturisa**<sup>®</sup>  
(osilodrostat)

# ISTURISA efficacy and safety were assessed in a 48-week pivotal study<sup>5,23</sup>

LINC 3 is a rigorous phase III clinical trial (N=137 patients with CD) that included a randomized, double-blind, placebo-controlled withdrawal period<sup>5,23</sup>



\*Titration occurred every 2 weeks if mUFC was greater than the ULN.<sup>5</sup>

## Inclusion criteria<sup>23</sup>

- ✓ Patients aged 18–75 years with a confirmed diagnosis of persistent, recurrent, or de novo (if not surgical candidates) Cushing’s disease
- ✓ Confirmed Cushing’s disease as determined by mUFC >1.5 x ULN at screening
- ✓ Patients with a history of pituitary surgery had to be at least 30 days post surgery

mUFC, mean urinary free cortisol; ULN, upper limit of normal.

## Baseline characteristics<sup>5,23</sup>

- Mean age at enrollment was 41 years
- 77% of patients were female
- 88% of enrolled patients had previous surgery
- Mean mUFC at baseline was 365 µg/24 hr (~7 x ULN)
- Median mUFC was 173 µg/24 hr (~3.5 x ULN)

## Important Safety Information (continued)

### Warnings and Precautions (continued)

- **QTc Prolongation:** ISTURISA is associated with a dose-dependent QT interval prolongation which may cause cardiac arrhythmias. Perform an ECG to obtain a baseline QTc interval measurement prior to initiating therapy with ISTURISA and monitor for an effect on the QTc interval thereafter.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

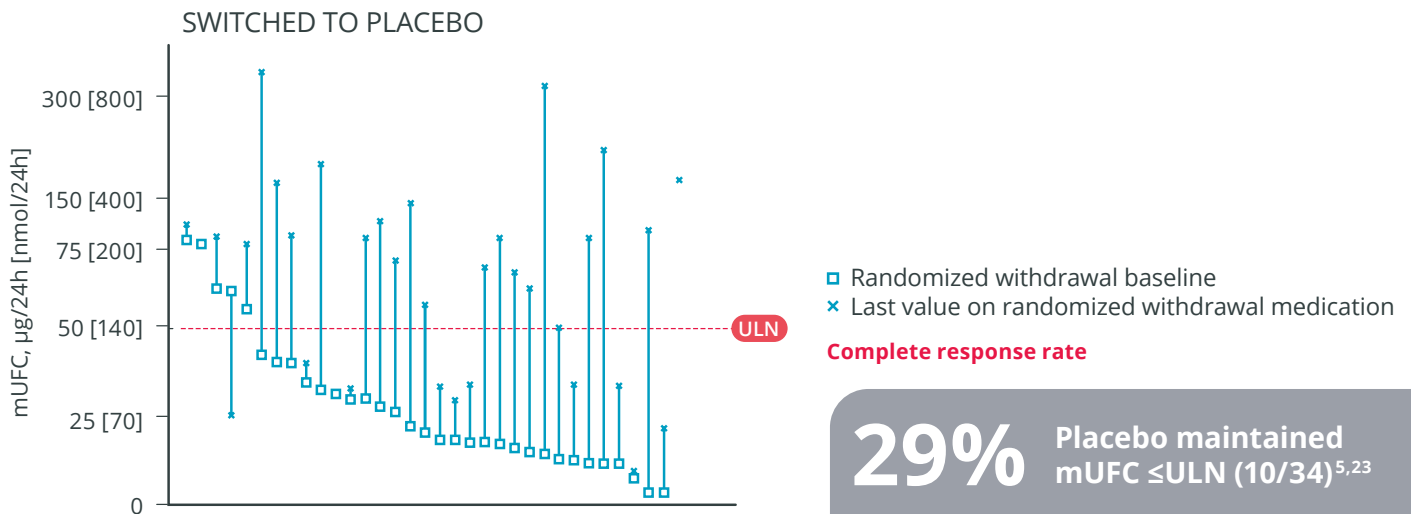
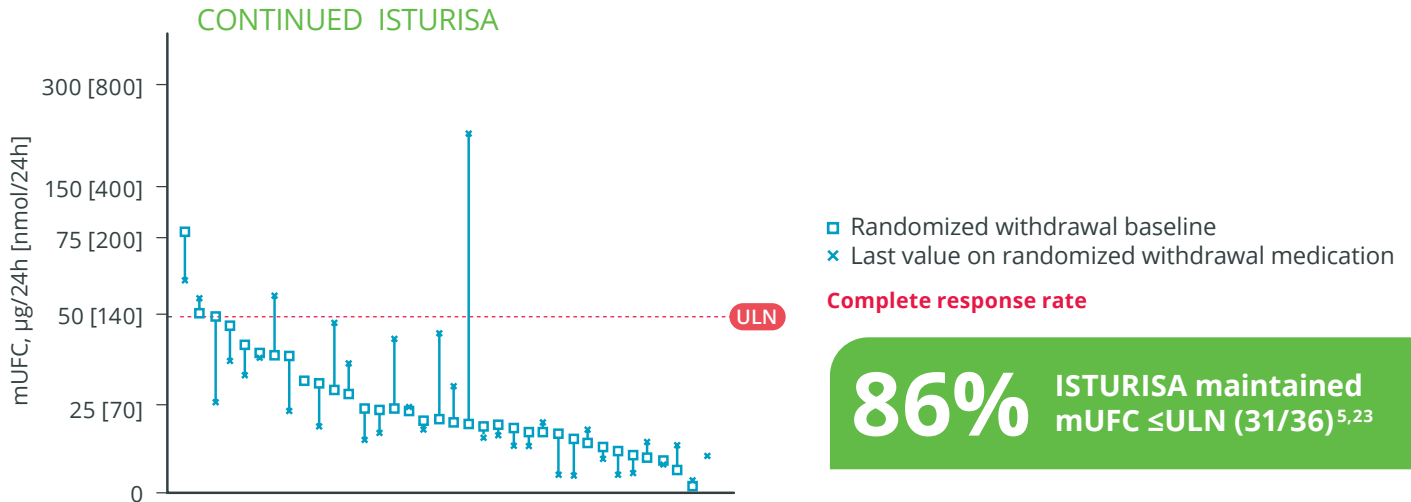


# ISTURISA effectively normalized and sustained mUFC in the majority of patients<sup>5</sup>

Demonstrated superiority over placebo at maintaining mUFC  $\leq$ ULN at the end of period 3 randomized withdrawal (n=71,  $P < 0.001$ )<sup>5</sup>

## PRIMARY ENDPOINT

Complete responder rate\* at week 34 (end of randomized withdrawal period)



Adapted from Pivonello R et al. 2020.

\*Complete responder rate in period 3 = % who maintained normal mUFC without a dose increase during the 8-week randomized withdrawal period.

## Important Safety Information (continued)

### Warnings and Precautions (continued)

- **QTc Prolongation (continued):** Correct hypokalemia and/or hypomagnesemia prior to ISTURISA initiation and monitor periodically during treatment with ISTURISA. Use with caution in patients with risk factors for QT prolongation and consider more frequent ECG monitoring. Please see section 5.2 of full Prescribing Information.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

# Key data in the LINC 3 study demonstrated early improvements with ISTURISA<sup>5,23</sup>

A significant portion of patients maintained normalized mUFC with ISTURISA at the therapeutic dose established during the titration period<sup>5,23</sup>

## KEY SECONDARY ENDPOINT

Complete responder rate at week 24 (end of maintenance period)

**53%**

of ISTURISA patients maintained mUFC  $\leq$ ULN at week 24 without up-titration after week 12 (N=72/137)<sup>5,23,\*</sup>

## ADDITIONAL DATA DEMONSTRATED OTHER SIGNS OF IMPROVEMENT WITH ISTURISA<sup>23,†</sup>

Irrespective of dose increase,

**68%**

of patients achieved mUFC  $\leq$ ULN at week 24 (N=93/137)

The median time to first complete response (mUFC  $\leq$ ULN) was

**41 days**

**96%** of patients achieved cortisol normalization at least once during the study

\*The lower bound of this 95% CI exceeded 30%, the pre-specified threshold for statistical significance and minimum threshold for clinical benefit.<sup>5</sup>

†These data were not included in primary or secondary endpoint analyses and were assessed post-hoc.

### Important Safety Information (continued)

#### Warnings and Precautions (continued)

- **Elevations in Adrenal Hormone Precursors and Androgens:** ISTURISA blocks cortisol synthesis and may increase circulating levels of cortisol and aldosterone precursors and androgens. This may activate mineralocorticoid receptors and cause hypokalemia, edema and hypertension. Hypokalemia should be corrected prior to initiating ISTURISA. Monitor patients treated with ISTURISA for hypokalemia, worsening of hypertension and edema. Inform patients of the symptoms associated with hyperandrogenism and advise them to contact a healthcare provider if they occur. Please see section 5.3 of full Prescribing Information.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

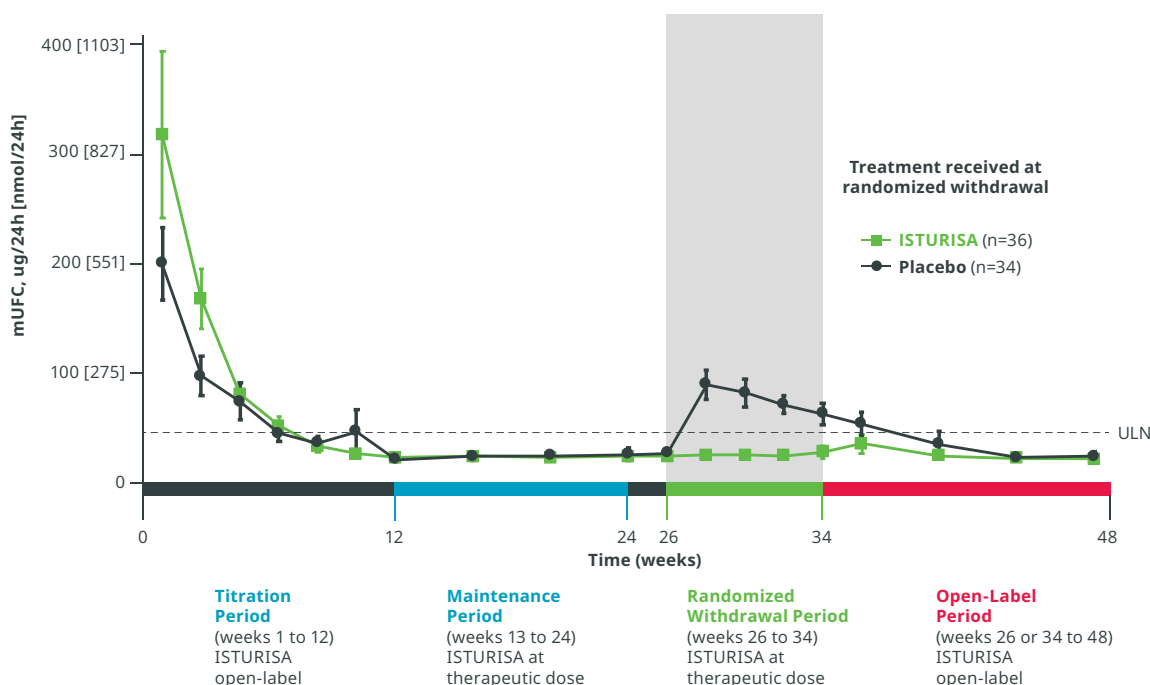
# ISTURISA sustained normal mUFC up to 48 weeks in the majority of patients<sup>5</sup>

Mean mUFC decreased rapidly during the titration period, then remained below baseline through week 48<sup>24</sup>

**48-WEEK STUDY ENDPOINT**  
(ITT analysis, end of open-label period)

**66%** of ISTURISA patients maintained mUFC  $\leq$ ULN at week 48 (N=91/137)<sup>5</sup>

MEAN ( $\pm$ SEM) mUFC AT TIME POINTS UP TO WEEK 48, AMONG ALL PATIENTS WHO RECEIVED TREATMENT IN THE RANDOMIZED WITHDRAWAL PERIOD<sup>24</sup>



- Average daily ISTURISA dose for all patients through 48 weeks was 10 mg/day<sup>25,\*</sup>

\*Among patients who were ineligible for the randomized withdrawal period, the average daily ISTURISA dose was 11 mg/day.<sup>25</sup>

ITT, intention-to-treat.

## Important Safety Information (continued)

### Adverse Reactions

- Most common adverse reactions (incidence >20%) are adrenal insufficiency, fatigue, nausea, headache, and edema.
- To report SUSPECTED ADVERSE REACTIONS, contact Recordati Rare Diseases Inc. at 1-888-575-8344, or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).








Please see Important Safety Information throughout and accompanying full Prescribing Information.





# Improvements were also observed for metabolic, CushingQoL, and depression parameters<sup>5,23</sup>

Overall, mean improvements were observed from baseline<sup>23,25</sup>

	Baseline	Week 24	Week 48
 Systolic blood pressure (mmHg)*	132.2	124.9 (-4.1%)	121.7 (-6.8%)
Diastolic blood pressure (mmHg)*	85.3	81.0 (-3.8%)	78.9 (-6.6%)
 Body weight (kg)	80.8	77.3 (-3.0%)	75.5 (-4.6%)
 Waist circumference (cm)	103.5	99.1 (-2.6%)	97.4 (-4.2%)
 HbA1c (%)*	6.0	5.6 (-4.6%)	5.6 (-5.4%)
 Total cholesterol (mg/dL)	205.0	181.8 (-9.0%)	185.6 (-8.8%)
 CushingQoL (total score) <sup>†</sup>	42.2	52.1 (42.4%)	58.2 (52.3%)
 BDI-II (total score) <sup>‡</sup>	16.8	12.9 (-19.2%)	10.7 (-30.8%)

\*Because the study allowed initiation of anti-hypertensive and anti-diabetic medications and dose increases in patients already receiving such medications and there was absence of a control group, the individual contribution of ISTURISA or of anti-hypertensive and anti-diabetic medication adjustments cannot be clearly established.

<sup>†</sup>CushingQoL is a disease-generated questionnaire proven to be a reliable and valid instrument for measuring health-related quality of life in patients with Cushing's syndrome. Scores correlate with relevant clinical parameters.<sup>26</sup>

<sup>‡</sup>BDI-II is a proven valid and reliable 21-item self-report multiple-choice inventory tool used to evaluate depressive states that occur at high prevalence among the medically ill.<sup>27</sup>

BDI-II, Beck Depression Inventory-II; CushingQoL, Cushing's Quality of Life questionnaire; HbA1c, glycosylated hemoglobin.

## Important Safety Information (continued)

### Drug Interactions

- **CYP3A4 Inhibitor:** Reduce the dose of ISTURISA by half with concomitant use of a strong CYP3A4 inhibitor.
- **CYP3A4 and CYP2B6 Inducers:** An increase of ISTURISA dosage may be needed if ISTURISA is used concomitantly with strong CYP3A4 and CYP2B6 inducers. A reduction in ISTURISA dosage may be needed if strong CYP3A4 and CYP2B6 inducers are discontinued while using ISTURISA.

Please see Important Safety Information throughout and accompanying full Prescribing Information.



# An expected and manageable safety profile demonstrated through 48 weeks<sup>5</sup>

Adverse reactions among 137 patients with CD who received at least one dose of ISTURISA in the study:

Adverse reaction (N=137) (Frequency >15%)	%
Adrenal insufficiency <sup>a</sup>	43.1
Fatigue <sup>b</sup>	38.7
Nausea	37.2
Headache <sup>c</sup>	30.7
Edema <sup>d</sup>	21.2
Nasopharyngitis	19.7
Vomiting	19.0
Arthralgia	17.5
Back pain	15.3
Rash <sup>e</sup>	15.3

<sup>a</sup>Adrenal insufficiency includes glucocorticoid deficiency, adrenocortical insufficiency acute, steroid withdrawal syndrome, cortisol free urine decreased, cortisol decreased. One-third of the subjects with this event had low cortisol levels indicative of adrenal insufficiency. The majority of subjects had normal cortisol levels suggesting a cortisol withdrawal syndrome.

<sup>b</sup>Fatigue includes lethargy, asthenia.

<sup>c</sup>Headache includes head discomfort.

<sup>d</sup>Edema includes edema peripheral, generalized edema, localized edema.

<sup>e</sup>Rash includes rash erythematous, rash generalized, rash maculopapular, rash papular.

AMONG THE **43%** OF PATIENTS WHO WERE DEEMED TO HAVE EXPERIENCED ADRENAL INSUFFICIENCY, **1/3** HAD LOW CORTISOL LEVELS INDICATIVE OF ADRENAL INSUFFICIENCY<sup>5</sup>

HYPOCORTISOLISM WAS REPORTED AT A RATE OF **31%** DURING WEEKS 1 TO 12 AND **18%** DURING WEEKS 12 TO 26<sup>5</sup>

- Hypocortisolism is manageable by reducing the dose of ISTURISA and/or adding low-dose, short-term glucocorticoid therapy
- 25 of 70 patients with one or more hypocortisolism-related event received glucocorticoid supplementation during the duration of the study<sup>23</sup>

*Hirsutism was observed in 12% of female patients. This adverse event was considered mild to moderate,\* and no patient discontinued as a result<sup>5,23</sup>*

\*Mild to moderate = severity rated by investigator as 1 or 2 in the LINC 3 clinical trial.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

# Improvements were maintained during the 72-week open-label extension<sup>28</sup>

ISTURISA sustained normal mUFC for over a year in the majority of patients who entered the open-label extension (N=106)<sup>28</sup>





## LINC 3 EXTENSION RESULTS

Complete responder rate at week 72

**81%**

of ISTURISA patients who entered the extension maintained mUFC  $\leq$ ULN at week 72<sup>28</sup>

IMPROVEMENTS IN CARDIOVASCULAR-RELATED PARAMETERS WERE MAINTAINED THROUGH THE OPEN-LABEL EXTENSION<sup>28</sup>

	72 Weeks Mean change from core baseline
 Systolic blood pressure (mmHg)	-10.1
 Diastolic blood pressure (mmHg)	-5.8
 HbA1c (%)	-0.4%
 BMI (kg/m <sup>2</sup> )	-1.8

## ISTURISA was well tolerated, with no new safety signals reported during long-term treatment<sup>28</sup>

- 106 of 137 enrolled patients entered the optional extension<sup>28</sup>
- Median duration of ISTURISA treatment from baseline to study end for all enrolled patients was 130 weeks with a median dose of 7.4 mg/day<sup>28</sup>
- Most hypocortisolism-related AEs emerged during the first 26 weeks of treatment and AEs related to adrenal hormone precursor accumulation were less frequent in the extension<sup>28</sup>
- Mean testosterone levels in women increased upon initiation of ISTURISA but tended to return to baseline levels and within the normal range at 72 weeks (0.8  $\times$  ULN)<sup>5,28</sup>

### Important Safety Information (continued)

#### Use in Specific Populations

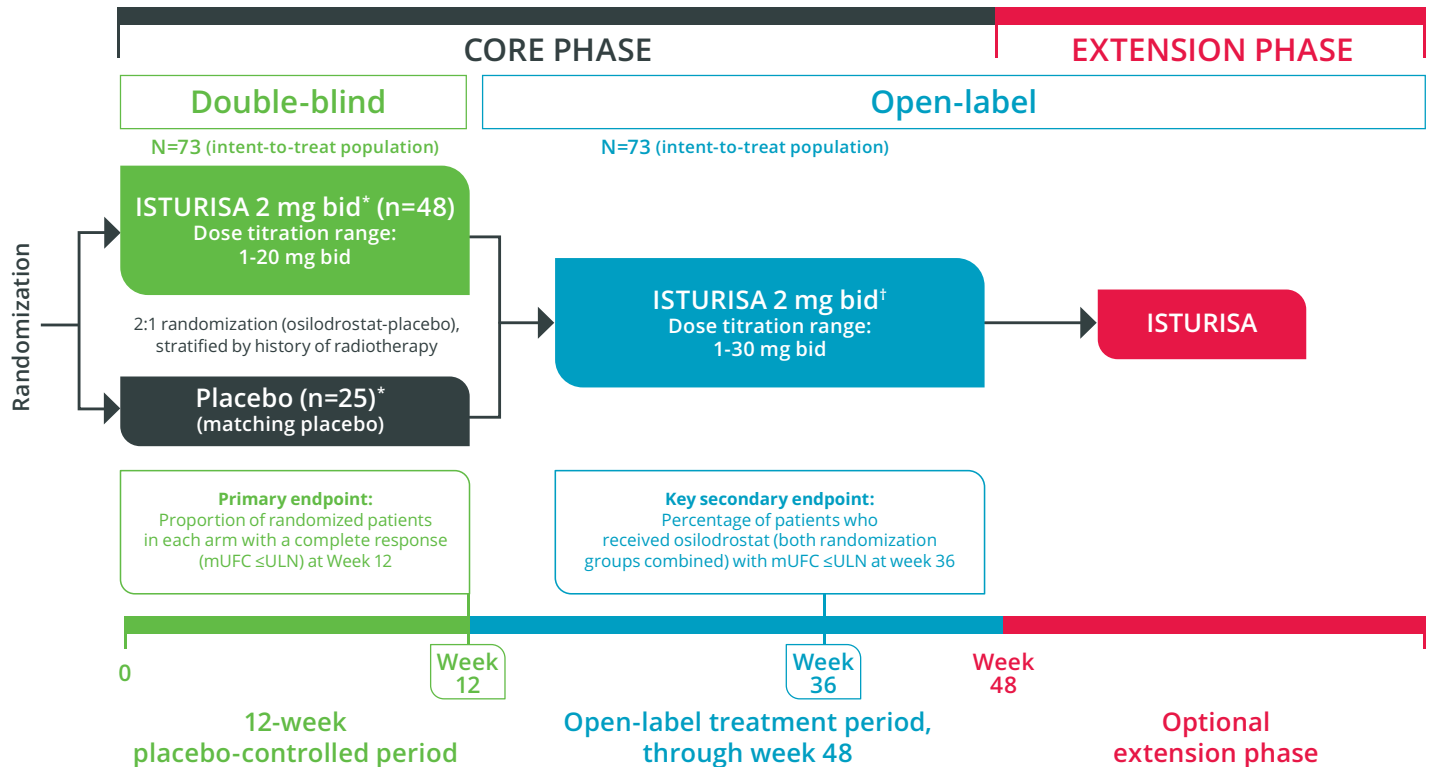
- **Lactation:** Breastfeeding is not recommended during treatment with ISTURISA and for at least one week after treatment.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

# The safety and efficacy of ISTURISA were assessed in a placebo-controlled multicenter study with optional extension<sup>29</sup>

LINC 4 is a randomized, double-blind, parallel, placebo-controlled clinical trial to evaluate the safety and efficacy of ISTURISA among 73 patients with CD (mUFC >1.3 × ULN)<sup>29</sup>



\*Patients started on ISTURISA 2 mg twice daily (baseline median mUFC was 2.5 × ULN [0.7-12.5]) or matching placebo (baseline median mUFC was 2.2 × ULN [0.2-18.9]). Dose adjustments to normalize mUFC or to address safety issues were permitted at week 2, week 5, and week 8 (range 1-20 mg bid) based on efficacy and tolerability.<sup>29</sup>

†Starting at week 12, all patients received open-label ISTURISA, with dose adjustments permitted (range 1-30 mg bid).<sup>29</sup>

## Important Safety Information (continued)

### Warnings and Precautions (continued)

- **Hypocortisolism:** Monitor patients closely for hypocortisolism and potentially life-threatening adrenal insufficiency. Dosage reduction or interruption of treatment with ISTURISA may be necessary. Please see section 5.1 in full Prescribing Information.

Please see Important Safety Information throughout and accompanying full Prescribing Information.





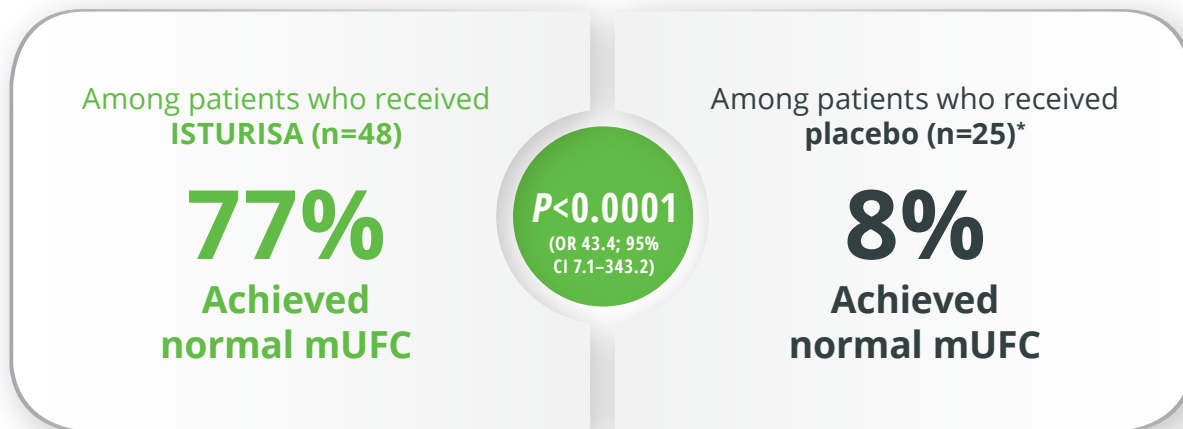
# ISTURISA rapidly and effectively normalized cortisol levels in the majority of patients<sup>29</sup>

Demonstrated superiority over placebo at normalizing cortisol (mUFC  $\leq$ ULN) at week 12 (N=73,  $P<0.0001$ )<sup>29</sup>

## PRIMARY ENDPOINT

Significantly more patients had mUFC  $\leq$ ULN with ISTURISA at week 12 ( $P<0.0001$ )<sup>29</sup>

12-WEEK, DOUBLE-BLIND, PARALLEL, PLACEBO-CONTROLLED PERIOD (N=73)



Dose adjustments were made at weeks 2, 5, and 8 followed by adjustments every 3 weeks based on patient response and tolerability<sup>29,\*</sup>

**Note: Adverse events related to hypocortisolism occurred in 15% vs 0% of ISTURISA and placebo patients during titration.<sup>29</sup>**

*The median duration of ISTURISA exposure until first controlled response (mUFC  $\leq$ ULN) was 35 days for patients randomized to osilodrostat<sup>29</sup>*

*CI, confidence interval; mUFC, mean urinary free cortisol; OR, odds ratio; ULN, upper limit of normal.*

### Important Safety Information (continued)

#### Warnings and Precautions (continued)

- **QTc Prolongation:** Perform electrocardiogram in all patients. Use with caution in patients with risk factors for QTc prolongation. Please see section 5.2 in full Prescribing Information.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

# ISTURISA effectively sustained cortisol normalization in the majority of patients<sup>29</sup>

Maintained mUFC  $\leq$ ULN for more than 4 out of 5 patients at week 36 in the open-label period (N=73)<sup>29</sup>

## KEY SECONDARY ENDPOINT

Proportion of patients with mUFC  $\leq$ ULN at week 36

**81%** of ISTURISA patients maintained normalized mUFC (mUFC  $\leq$ ULN) at week 36 (N=59/73)<sup>29</sup>

Median ISTURISA dose at study end was<sup>29</sup>:

- 4.7 mg/day in patients initially assigned to ISTURISA
- 6.0 mg/day in patients initially assigned to placebo

The most common AEs observed during the overall study while on ISTURISA were<sup>29</sup>:

- Arthralgia (45%) • Decreased appetite (45%) • Fatigue (38%) • Nausea (37%) • Headache (33%)

## KEY LEARNINGS FROM LINC 4 STUDY<sup>29</sup>:



ISTURISA provides rapid and sustained normalization of cortisol



ISTURISA is well tolerated and has a manageable safety profile



Response and tolerability may be managed with close monitoring and dose adjustments

### Important Safety Information (continued)

#### Warnings and Precautions (continued)

- **Elevations in Adrenal Hormone Precursors and Androgens:** Monitor patients treated with ISTURISA for hypokalemia, worsening of hypertension, edema, and hirsutism. Please see section 5.3 in full Prescribing Information.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)

# Some patients may experience adrenal insufficiency with ISTURISA<sup>5,\*</sup>

Hypocortisolism-related events occurred at a lower rate in LINC 4 (27%) than in LINC 3 (43.1%)<sup>5,30</sup>

ISTURISA titration was slower in LINC 4 without compromising the ability to achieve cortisol normalization<sup>30</sup>

Patients in LINC 3 received dose increases every **2 weeks**<sup>30</sup>

Patients in LINC 4 received dose increases approximately every **3 weeks**<sup>30</sup>

“Reductions in cortisol levels during osilodrostat therapy can lead to hypocortisolism, which may be mitigated by slow dose uptitration.”<sup>30</sup>

\*Adrenal insufficiency includes glucocorticoid deficiency, adrenocortical insufficiency acute, steroid withdrawal syndrome, cortisol free urine decreased, cortisol decreased.



## Counsel patients to recognize and report the symptoms suggestive of hypocortisolism<sup>5</sup>

- Nausea
- Vomiting
- Fatigue
- Abdominal pain
- Loss of appetite
- Dizziness
- Low blood pressure
- Syncope

## Important Safety Information (continued)

### Adverse Reactions

- Most common adverse reactions (incidence >20%) are adrenal insufficiency, fatigue, nausea, headache, and edema.
- To report SUSPECTED ADVERSE REACTIONS, contact Recordati Rare Diseases Inc. at 1-888-575-8344, or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).

Please see Important Safety Information throughout and accompanying full Prescribing Information.




 **Isturisa**<sup>®</sup>  
(osilodrostat)

# Flexible dosing allows for individualized patient care<sup>5</sup>

Multiple dosing options allow you to adjust therapy for each patient's unique needs<sup>5</sup>



TABLETS SIZE<sup>5,24</sup>:

1 mg		6.1 mm
5 mg		7.1 mm
10 mg		9.1 mm

01 →

## START

ISTURISA 2 mg twice daily *with or without food*\*

02 →

## TITRATE

Up in 1- or 2-mg increments twice daily, no more than once every 2 weeks based on individual response and tolerability. If your patient tolerates 10 mg twice daily and continues to have elevated 24-hour UFC levels above the ULN, you may up-titrate by 5 mg twice daily every 2 weeks



03 →

## MONITOR

Cortisol levels every 1 to 2 weeks until adequate clinical response is maintained. Consider less frequent monitoring thereafter

*Stay in control by monitoring your patient's changes in cortisol*

Unlike cortisol receptor blockers, ISTURISA lets you objectively monitor each patient's individual changes in cortisol<sup>5,31</sup>

\*The recommended starting dose for patients with moderate hepatic impairment (Child-Pugh B) is 1 mg twice daily; for patients with severe hepatic impairment (Child-Pugh C), the recommended starting dose is 1 mg once daily in the evening.

UFC, urinary free cortisol; ULN, upper limit of normal.

### Important Safety Information (continued)

#### Drug Interactions

- **CYP3A4 Inhibitor:** Reduce the dose of ISTURISA by half with concomitant use of a strong CYP3A4 inhibitor.
- **CYP3A4 and CYP2B6 Inducers:** An increase of ISTURISA dosage may be needed if ISTURISA is used concomitantly with strong CYP3A4 and CYP2B6 inducers. A reduction in ISTURISA dosage may be needed if strong CYP3A4 and CYP2B6 inducers are discontinued while using ISTURISA.

Please see Important Safety Information throughout and accompanying full Prescribing Information.

 **Isturisa**<sup>®</sup>  
(osilodrostat)



**ISTURISA is available exclusively through the R.A.R.E.<sup>SM</sup> patient support program**

- Designed to ensure your patients receive dedicated, multi-point services and support every way



**ACCESS AND FINANCIAL  
ASSISTANCE**



**DISPENSING  
AND DELIVERY**



**EDUCATION  
AND ADHERENCE**



**COMMERCIALLY INSURED PATIENTS MAY HAVE  
A CO-PAY OF [NO MORE THAN \$20 PER MONTH\*]**

\*Eligibility requirements, restrictions, and limitations apply.

**RareResources.com is your one-stop source to start a new patient and provides access to a full range of Recordati Rare Disease tools and resources for ISTURISA**

TO GET YOUR PATIENT STARTED:



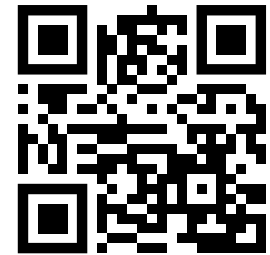
**STEP 1:  
FILL OUT A PATIENT REFERRAL FORM**

- Visit **RareResources.com** or scan here to download patient referral forms



**STEP 2:  
FAX THE FORM**

- Fax the Patient Referral Form to **1-855-813-2039**



Contact the R.A.R.E. Patient Support Program for assistance  
Monday–Friday between 9:00 AM and 6:00 PM ET  
Phone: **1-888-855-RARE (7273)** Fax: **1-855-813-2039**  
*A clinical pharmacist is always available.*

# Important Safety Information

## Indications and Usage

ISTURISA (osilodrostat) is a cortisol synthesis inhibitor indicated for the treatment of adult patients with Cushing's disease for whom pituitary surgery is not an option or has not been curative.

## Important Safety Information

### Warnings and Precautions

- **Hypocortisolism:** ISTURISA lowers cortisol levels and can lead to hypocortisolism and sometimes life-threatening adrenal insufficiency. Lowering of cortisol can cause nausea, vomiting, fatigue, abdominal pain, loss of appetite, and dizziness. Significant lowering of serum cortisol may result in hypotension, abnormal electrolyte levels, and hypoglycemia.

Hypocortisolism can occur at any time during ISTURISA treatment. Evaluate patients for precipitating causes of hypocortisolism (infection, physical stress, etc). Monitor 24-hr urine free cortisol, serum or plasma cortisol, and patient's signs and symptoms periodically during ISTURISA treatment.

Decrease or temporarily discontinue ISTURISA if urine free cortisol levels fall below the target range, there is a rapid decrease in cortisol levels, and/or patients report symptoms of hypocortisolism. Stop ISTURISA and administer exogenous glucocorticoid replacement therapy if serum or plasma cortisol levels are below target range and patients have symptoms of adrenal insufficiency. After ISTURISA discontinuation, cortisol suppression may persist beyond the 4-hour half-life of ISTURISA. Please see section 5.1 of full Prescribing Information.

Educate patients on the symptoms associated with hypocortisolism and advise them to contact a healthcare provider if they occur.

- **QTc Prolongation:** ISTURISA is associated with a dose-dependent QT interval prolongation which may cause cardiac arrhythmias. Perform an ECG to obtain a baseline QTc interval measurement prior to initiating therapy with ISTURISA and monitor for an effect on the QTc interval thereafter. Correct hypokalemia and/or hypomagnesemia prior to ISTURISA initiation and monitor periodically during treatment with ISTURISA. Use with caution in patients with risk factors for QT prolongation and consider more frequent ECG monitoring. Please see section 5.2 of full Prescribing Information.
- **Elevations in Adrenal Hormone Precursors and Androgens:** ISTURISA blocks cortisol synthesis and may increase circulating levels of cortisol and aldosterone precursors and androgens. This may activate mineralocorticoid receptors and cause hypokalemia, edema and hypertension. Hypokalemia should be corrected prior to initiating ISTURISA. Monitor patients treated with ISTURISA for hypokalemia, worsening of hypertension and edema. Inform patients of the symptoms associated with hyperandrogenism and advise them to contact a healthcare provider if they occur. Please see section 5.3 of full Prescribing Information.

### Adverse Reactions

- Most common adverse reactions (incidence >20%) are adrenal insufficiency, fatigue, nausea, headache, and edema.
- **To report SUSPECTED ADVERSE REACTIONS, contact Recordati Rare Diseases Inc. at 1-888-575-8344, or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).**

### Drug Interactions

- **CYP3A4 Inhibitor:** Reduce the dose of ISTURISA by half with concomitant use of a strong CYP3A4 inhibitor.
- **CYP3A4 and CYP2B6 Inducers:** An increase of ISTURISA dosage may be needed if ISTURISA is used concomitantly with strong CYP3A4 and CYP2B6 inducers. A reduction in ISTURISA dosage may be needed if strong CYP3A4 and CYP2B6 inducers are discontinued while using ISTURISA.

### Use in Specific Populations

- **Lactation:** Breastfeeding is not recommended during treatment with ISTURISA and for at least one week after treatment.

Please see Important Safety Information throughout and accompanying full Prescribing Information.



# References

1. Geer EB, Shafiq I, Gordon MB, et al. Biochemical control during long-term follow-up of 230 adult patients with Cushing disease: a multicenter retrospective study. *Endocr Pract.* 2017;23(8):962-970.
2. Dekkers OM, Horváth-Puhó E, Jørgensen JOL, et al. Multisystem morbidity and mortality in Cushing's syndrome: a cohort study. *J Clin Endocrinol Metab.* 2013;98(6):2277-2284.
3. Geer EB, Ayala A, Bonert V, et al. Follow-up intervals in patients with Cushing's disease: recommendations from a panel of experienced pituitary clinicians. *Pituitary.* 2017;20(4):422-429.
4. Fleseriu M, Auchus R, Bancos I, et al. Consensus on diagnosis and management of Cushing's disease: a guideline update. *Lancet.* 2021; [https://doi.org/10.1016/S2213-8587\(21\)00235-7](https://doi.org/10.1016/S2213-8587(21)00235-7).
5. ISTURISA® (osilodrostat) [prescribing information]. Lebanon, NJ: Recordati Rare Diseases Inc.; 2020
6. Bertagna X, Guignat L, Groussin L, Bertherat J. Cushing's disease. *Best Pract Res Clin Endocrinol Metab.* 2009; 23:607-623.
7. Dekkers OM, Biermasz NR, Pereira AM, et al. Mortality in patients treated for Cushing's disease is increased, compared with patients treated for nonfunctioning pituitary macroadenoma. *J Clin Endocrinol Metab.* 2007;92(3):976-981
8. Pivonello R, De Leo M, Cozzolino A, Colao A. The treatment of Cushing's disease. *Endocr Rev.* 2015;36(4):385-486.
9. Patil CG, Prevedello DM, Lad SP, et al. Late recurrences of Cushing's disease after initial successful transsphenoidal surgery. *J Clin Endocrinol Metab.* 2008;93(2):358-362.
10. Ferriere A, Tabarin A. Cushing's syndrome: treatment and new therapeutic approaches. *Best Pract Res Clin Endocrinol Metab.* 2020;34(2):1-16.
11. Braun LT, Rubinstein G, Zopp S, et al. Recurrence after pituitary surgery in adult Cushing's disease: a systematic review on diagnosis and treatment. *Endocrine.* 2020;70:218-231.
12. Lacroix A, Feelders RA, Stratakis CA, et al. Cushing's syndrome. *Lancet.* 2015;386(9996):913-927.
13. Fleseriu M, Castinetti F. Updates on the role of adrenal steroidogenesis inhibitors in Cushing's syndrome: a focus on novel therapies. *Pituitary.* 2016;19(6):643-653.
14. Nieman LK. Cushing's syndrome: update on signs, symptoms and biochemical screening. *Eur J Endocrinol.* 2015;173(4):1-10.
15. Braun LT, Riester A, Oßwald-Kopp A, et al. Toward a diagnostic score in Cushing's syndrome. *Front Endocrinol (Lausanne).* 2019;10(766):1-12.
16. Nieman LK, Biller BM, Findling JW, et al. The diagnosis of Cushing's syndrome: an Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab.* 2008;93(5):1526-1540.
17. Arnaldi G, Angeli A, Atkinson AB, et al. Diagnosis and complications of Cushing's syndrome: a consensus statement. *J Clin Endocrinol Metab.* 2003;88(12):5593-5602.
18. Kuan EC, Peng KA, Suh JD, et al. Otolaryngic manifestations of Cushing's disease. *Ear Nose Throat J.* 2017;96(8):28-30.
19. Boscaro M, Arnaldi G. Approach to the patient with possible Cushing's syndrome. *J Clin Endocrinol Metab.* 2009;94(9):3121-3131.
20. Sharma ST, Nieman LK, Feelders RA. Comorbidities in Cushing's disease. *Pituitary.* 2015;18(2):188-194.
21. Bertagna X, Pivonello R, Fleseriu M, et al. LCI699, a potent 11 $\beta$ -hydroxylase inhibitor, normalizes urinary cortisol in patients with Cushing's disease: results from a multicenter, proof-of-concept study. *The Journal of Clinical Endocrinology & Metabolism.* 2014;99(4):1375-1383.
22. Ménard J, Rigel D, Watson C, et al. Aldosterone synthase inhibition: cardiorenal protection in animal disease models and translation of hormonal effects to human subjects. *J Transl Med.* 2014;12:340.
23. Pivonello R, Fleseriu M, Newell-Price J, et al. Efficacy and safety of osilodrostat in patients with Cushing's disease (LINC 3): a multicentre phase III study with a double-blind, randomised withdrawal phase. *Lancet Diabetes Endocrinol.* 2020;8(9):748-761.
24. Pivonello R, Fleseriu M, Newell-Price J, et al. Efficacy and safety of osilodrostat in patients with Cushing's disease (LINC 3): a multicentre phase III study with a double-blind, randomised withdrawal phase. *Lancet Diabetes Endocrinol.* 2020;8(9)(suppl).
25. Data on file. Recordati Rare Diseases Inc. Lebanon, NJ.
26. Webb SM, Badia X, Barahona MJ, et al. Evaluation of health-related quality of life in patients with Cushing's syndrome with a new questionnaire. *Eur J Endocrinol.* 2008;158(5):623-630.
27. Wang YP, Gorenstein C. Assessment of depression in medical patients: a systematic review of the utility of the Beck Depression Inventory-II. *Clinics (Sao Paulo).* 2013;68(9):1274-1287.
28. Fleseriu M, Biller B, Pivonello R, et al. Osilodrostat is an effective and well-tolerated treatment option for patients with Cushing's disease (CD): Final results from the LINC3 study. *23rd European Congress of Endocrinology 2021.* 2021;73(OC8.2): 58.
29. Gadelha M, Bex M, Feelders R, et al. Osilodrostat is an effective and well-tolerated treatment for Cushing's disease (CD): results from a phase III study with an upfront, randomized, double-blind, placebo-controlled phase (LINC 4). *J Endocr Soc.* 2021;5: A516-A517.
30. Fleseriu M, Auchus R, Snyder P, et al. Effect of dosing and titration of osilodrostat on efficacy and safety in patients with Cushing's disease (CD): results from two phase III trials (LINC3 and LINC4). *Endocrine Practice.* 2021;27(#999926):S112.
31. KORLYM® (mifepristone) [prescribing information]. Menlo Park, CA: Corcept Therapeutics Incorporated; 2019.

Please see Important Safety Information throughout and accompanying full Prescribing Information.





Set a course toward normalized cortisol



*When surgery is not an option or has failed to be curative,*  
**Put your CD patients on the path toward  
cortisol normalization with ISTURISA**

**ISTURISA is proven to deliver significant and sustained cortisol control  
in the majority of patients with persistent Cushing's disease<sup>5,23,29</sup>**

**LINC 3:** Demonstrated **superiority over placebo at maintaining mUFC  $\leq$ ULN** after randomized withdrawal  
N=71,  $P < 0.001$  (86% complete responder rate with ISTURISA [n=31/36] vs 29% with placebo [n=10/34])<sup>5,23</sup>

**LINC 4:** Significantly **more patients had mUFC  $\leq$ ULN with ISTURISA** at week 12  
N=73,  $P < 0.0001$  (77% complete responder rate with ISTURISA [n=48] vs 8% with placebo [n=25])<sup>29</sup>

- ISTURISA delivered improvements in clinical signs of hypercortisolism<sup>23</sup>
- Three tablet dose strengths provide the flexibility to individualize therapy<sup>5</sup>
- Adverse reactions were expected and manageable<sup>5</sup>
- The most common adverse reactions (incidence  $>20\%$ ) were:
  - Adrenal insufficiency, fatigue, nausea, headache, and edema in LINC 3<sup>5</sup>
  - Arthralgia, decreased appetite, fatigue, nausea, and headache in LINC 4<sup>29</sup>

Visit **RareResources.com** for more information and to download patient referral forms  
— Commercially insured patients may have a co-pay of [no more than \$20 per month\*]

\*Eligibility requirements, restrictions, and limitations apply.

**Important Safety Information** *(continued)*

**Use in Specific Populations**

- **Lactation:** Breastfeeding is not recommended during treatment with ISTURISA and for at least one week after treatment.

**Please see Important Safety Information throughout and accompanying full Prescribing Information.**



ISTURISA® is a licensed trademark of Recordati Rare Diseases Inc.  
Trademarks, registered or otherwise, are the property of their respective owner(s).  
© 2022 Recordati Rare Diseases Inc. All rights reserved. PP-IST-US-0192



## HIGHLIGHTS OF PRESCRIBING INFORMATION

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

# ISTURISA (osilodrostat) tablets, for oral use

Initial U.S. Approval: 2020

## INDICATIONS AND USAGE

ISTURISA is a cortisol synthesis inhibitor indicated for the treatment of adult patients with Cushing's disease for whom pituitary surgery is not an option or has not been curative (1)

## DOSAGE AND ADMINISTRATION

- Correct hypokalemia and hypomagnesemia, and obtain baseline electrocardiogram prior to starting ISTURISA (2.1, 5.2, 5.3)
- Initiate dosage at 2 mg orally twice daily, with or without food (2.2)
- Titrate dosage by 1 to 2 mg twice daily, no more frequently than every 2 weeks based on rate of cortisol changes, individual tolerability and improvement in signs and symptoms (2.2)
- Maximum recommended dosage is 30 mg twice daily (2.2)
- See Full Prescribing Information for complete titration, laboratory, and dosage modification recommendations (2.1, 2.2, 2.3)
- Patients with Hepatic Impairment:
  - *Child-Pugh B*: Recommended starting dose is 1 mg twice daily (2.5, 8.7)
  - *Child-Pugh C*: Recommended starting dose is 1 mg once daily in the evening (2.5, 8.7)

## DOSAGE FORMS AND STRENGTHS

Tablets: 1 mg, 5 mg, and 10 mg (3)

## CONTRAINDICATIONS

None (4)

## WARNINGS AND PRECAUTIONS

- *Hypocortisolism*: Monitor patients closely for hypocortisolism and potentially life-threatening adrenal insufficiency. Dosage reduction or interruption may be necessary (5.1)
- *QTc Prolongation*: Perform electrocardiogram in all patients. Use with caution in patients with risk factors for QTc prolongation (5.2)
- *Elevations in Adrenal Hormone Precursors and Androgens*: Monitor for hypokalemia, worsening of hypertension, edema, and hirsutism (5.3)

## ADVERSE REACTIONS

Most common adverse reactions (incidence > 20%) are adrenal insufficiency, fatigue, nausea, headache, edema (6)

To report SUSPECTED ADVERSE REACTIONS, contact Recordati Rare Diseases, Inc. at 1-888-575-8344 or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).

## DRUG INTERACTIONS

- *CYP3A4 Inhibitor*: Reduce the dose of ISTURISA by half with concomitant use of a strong CYP3A4 inhibitor (7.1)
- *CYP3A4 and CYP2B6 Inducers*: An increase of ISTURISA dosage may be needed if ISTURISA is used concomitantly with strong CYP3A4 and CYP2B6 inducers. A reduction in ISTURISA dosage may be needed if strong CYP3A4 and CYP2B6 inducers are discontinued while using ISTURISA (7.1)

## USE IN SPECIFIC POPULATIONS

- *Lactation*: Breastfeeding is not recommended during treatment with ISTURISA and for at least one week after treatment (8.2)

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

Revised: 3/2020

## FULL PRESCRIBING INFORMATION: CONTENTS\*

### 1 INDICATIONS AND USAGE

### 2 DOSAGE AND ADMINISTRATION

- 2.1 Laboratory Testing Prior to ISTURISA Initiation
- 2.2 Recommended Dosage, Titration, and Monitoring
- 2.3 Dosage Interruptions and Modifications
- 2.4 Recommended Dosage and Monitoring in Patients with Renal Impairment
- 2.5 Recommended Dosage and Monitoring in Patients with Hepatic Impairment
- 2.6 Missed Dose

### 3 DOSAGE FORMS AND STRENGTHS

### 4 CONTRAINDICATIONS

### 5 WARNINGS AND PRECAUTIONS

- 5.1 Hypocortisolism
- 5.2 QTc Prolongation
- 5.3 Elevations in Adrenal Hormone Precursors and Androgens

### 6 ADVERSE REACTIONS

- 6.1 Clinical Trials Experience

### 7 DRUG INTERACTIONS

- 7.1 Effect of Other Drugs on ISTURISA
- 7.2 Effect of ISTURISA on Other Drugs

### 8 USE IN SPECIFIC POPULATIONS

- 8.1 Pregnancy
- 8.2 Lactation
- 8.4 Pediatric Use
- 8.5 Geriatric Use
- 8.6 Renal Impairment
- 8.7 Hepatic Impairment

### 10 OVERDOSAGE

### 11 DESCRIPTION

### 12 CLINICAL PHARMACOLOGY

- 12.1 Mechanism of Action
- 12.2 Pharmacodynamics
- 12.3 Pharmacokinetics

### 13 NONCLINICAL TOXICOLOGY

- 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

### 14 CLINICAL STUDIES

### 16 HOW SUPPLIED/STORAGE AND HANDLING

### 17 PATIENT COUNSELING INFORMATION

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

## FULL PRESCRIBING INFORMATION

### 1 INDICATIONS AND USAGE

ISTURISA is a cortisol synthesis inhibitor indicated for the treatment of adult patients with Cushing's disease for whom pituitary surgery is not an option or has not been curative.

### 2 DOSAGE AND ADMINISTRATION

#### 2.1 Laboratory Testing Prior to ISTURISA Initiation

- Correct hypokalemia and hypomagnesemia prior to starting ISTURISA [see *Warnings and Precautions* (5.2, 5.3)].
- Obtain baseline electrocardiogram (ECG). Repeat ECG within one week after treatment initiation, and as clinically indicated thereafter [see *Warnings and Precautions* (5.2)].

#### 2.2 Recommended Dosage, Titration, and Monitoring

- Initiate dosing at 2 mg orally twice daily, with or without food.
- Initially, titrate the dosage by 1 to 2 mg twice daily, no more frequently than every 2 weeks based on the rate of cortisol changes, individual tolerability and improvement in signs and symptoms of Cushing's disease. If a patient tolerates ISTURISA dosage of 10 mg twice daily and continues to have elevated 24-hour urine free cortisol (UFC) levels above upper normal limit, the dosage can be

titrated further by 5 mg twice daily every 2 weeks. Monitor cortisol levels from at least two 24-hour urine free cortisol collections every 1-2 weeks until adequate clinical response is maintained.

- The maintenance dosage of ISTURISA is individualized and determined by titration based on cortisol levels and patient's signs and symptoms.
- The maintenance dosage varied between 2 mg and 7 mg twice daily in clinical trials. The maximum recommended maintenance dosage of ISTURISA is 30 mg twice daily.
- Once the maintenance dosage is achieved, monitor cortisol levels at least every 1-2 months or as indicated.

#### 2.3 Dosage Interruptions and Modifications

- Decrease or temporarily discontinue ISTURISA if urine free cortisol levels fall below the target range, there is a rapid decrease in cortisol levels, and/or patients report symptoms of hypocortisolism. If necessary, glucocorticoid replacement therapy should be initiated.
- Stop ISTURISA and administer exogenous glucocorticoid replacement therapy if serum or plasma cortisol levels are below target range and patients have symptoms of adrenal insufficiency [see *Warnings and Precautions* (5.1)].
- If treatment is interrupted, re-initiate ISTURISA at a lower dose when cortisol levels are within target ranges and patient symptoms have been resolved.

## 2.4 Recommended Dosage and Monitoring in Patients with Renal Impairment

- No dose adjustment is required for patients with renal impairment. Use caution in interpreting urine free cortisol levels in patients with moderate to severe renal impairment, due to reduced urine free cortisol excretion [see *Clinical Pharmacology* (12.3)].

## 2.5 Recommended Dosage and Monitoring in Patients with Hepatic Impairment

- For patients with moderate hepatic impairment (Child-Pugh B), the recommended starting dose is 1 mg twice daily. For patients with severe hepatic impairment (Child-Pugh C), the recommended starting dose is 1 mg once daily in the evening.
- No dose adjustment is required for patients with mild hepatic impairment (Child-Pugh A).
- More frequent monitoring of adrenal function may be required during dose titration in all patients with hepatic impairment [see *Clinical Pharmacology* (12.3)].

## 2.6 Missed Dose

If a dose of ISTURISA is missed, the patient should take their next dose at the regularly scheduled time.

## 3 DOSAGE FORMS AND STRENGTHS

ISTURISA is available as:

- 1 mg tablets: Pale yellow, unscored, round, biconvex with beveled edge tablet, debossed "Y1" on one side and "NVR" on the other side.
- 5 mg tablets: Yellow, unscored, round, biconvex with beveled edge tablet, debossed "Y2" on one side and "NVR" on the other side.
- 10 mg tablets: Pale orange brown, unscored, round, biconvex with beveled edge tablet, debossed "Y3" on one side and "NVR" on the other side.

## 4 CONTRAINDICATIONS

None.

## 5 WARNINGS AND PRECAUTIONS

### 5.1 Hypocortisolism

ISTURISA lowers cortisol levels and can lead to hypocortisolism and sometimes life-threatening adrenal insufficiency. Lowering of cortisol can cause nausea, vomiting, fatigue, abdominal pain, loss of appetite, dizziness. Significant lowering of serum cortisol may result in hypotension, abnormal electrolyte levels, and hypoglycemia [see *Adverse Reactions* (6)].

Hypocortisolism can occur at any time during ISTURISA treatment. Evaluate patients for precipitating causes of hypocortisolism (infection, physical stress, etc.). Monitor 24-hour urine free cortisol, serum or plasma cortisol, and patient's signs and symptoms periodically during ISTURISA treatment.

Decrease or temporarily discontinue ISTURISA if urine free cortisol levels fall below the target range, there is a rapid decrease in cortisol levels, and/or patients report symptoms of hypocortisolism. Stop ISTURISA and administer exogenous glucocorticoid replacement therapy if serum or plasma cortisol levels are below target range and patients have symptoms of adrenal insufficiency. Re-initiate ISTURISA at a lower dose when urine free cortisol, serum or plasma cortisol levels are within target range, and/or patient symptoms have resolved. After ISTURISA discontinuation, cortisol suppression may persist beyond the 4 hour half-life of ISTURISA.

Educate patients on the symptoms associated with hypocortisolism and advise them to contact a healthcare provider if they occur.

### 5.2 QTc Prolongation

ISTURISA is associated with a dose-dependent QT interval prolongation (maximum mean estimated QTcF increase of up to 5.3 ms at 30 mg), which may cause cardiac arrhythmias [see *Adverse Reactions* (6), *Clinical Pharmacology* (12.2)].

Perform an ECG to obtain a baseline QTc interval measurement prior to initiating therapy with ISTURISA and monitor for an effect on the QTc interval thereafter. Correct hypokalemia and/or hypomagnesemia prior to ISTURISA initiation and monitor periodically during treatment with ISTURISA. Correct electrolyte abnormalities if indicated. Consider temporary discontinuation of ISTURISA in the case of an increase in QTc interval > 480 ms.

Use caution in patients with risk factors for QT prolongation, (such as congenital long QT syndrome, congestive heart failure, bradyarrhythmias, uncorrected electrolyte abnormalities, and concomitant medications known to prolong the QT interval) and consider more frequent ECG monitoring.

### 5.3 Elevations in Adrenal Hormone Precursors and Androgens

ISTURISA blocks cortisol synthesis and may increase circulating levels of cortisol and aldosterone precursors (11-deoxy cortisol and 11-deoxycorticosterone) and androgens.

Elevated 11-deoxycorticosterone levels may activate mineralocorticoid receptors and cause hypokalemia, edema and hypertension [see *Adverse Reactions* (6)].

Hypokalemia should be corrected prior to initiating ISTURISA. Monitor patients treated with ISTURISA for hypokalemia, worsening of hypertension and edema. ISTURISA-induced hypokalemia should be treated with intravenous or oral potassium supplementation based on event severity. If hypokalemia persists despite potassium supplementation, consider adding mineralocorticoid antagonists. ISTURISA dose reduction or discontinuation may be necessary.

Accumulation of androgens may lead to hirsutism, hypertrichosis and acne (in females). Inform patients of the symptoms associated with hyperandrogenism and advise them to contact a healthcare provider if they occur.

## 6 ADVERSE REACTIONS

Clinically significant adverse reactions that appear in other sections of the labeling include:

- Hypocortisolism [see *Warnings and Precautions* (5.1)]
- QT Prolongation [see *Warnings and Precautions* (5.2)]
- Elevations in Adrenal Hormone Precursors and Androgens [see *Warnings and Precautions* (5.3)]

### 6.1 Clinical Trials 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 clinical trials of another drug and may not reflect the rates observed in practice.

A total of 137 Cushing's disease patients were exposed to ISTURISA in the study [see *Clinical Studies* (14)]. The adverse reactions that occurred with frequency higher than 10% during the core 48-week period are shown in Table 1.

**Table 1: Adverse Reactions With a Frequency of More Than 10% in 48-week Clinical Study in Cushing's Disease Patients**

Adverse Reaction Type	(N = 137) %
Adrenal insufficiency <sup>a</sup>	43.1
Fatigue <sup>b</sup>	38.7
Nausea	37.2
Headache <sup>c</sup>	30.7
Edema <sup>d</sup>	21.2
Nasopharyngitis	19.7
Vomiting	19
Arthralgia	17.5
Back pain	15.3
Rash <sup>e</sup>	15.3
Diarrhea	14.6
Blood corticotrophin increased	13.9
Dizziness <sup>f</sup>	13.9
Abdominal pain <sup>g</sup>	13.1
Hypokalaemia <sup>h</sup>	12.4
Myalgia	12.4
Decreased appetite	11.7
Hormone level abnormal	11.7
Hypotension <sup>i</sup>	11.7
Urinary tract infection	11.7
Blood testosterone increased	10.9
Pyrexia	10.9
Anemia	10.2
Cough	10.2
Hypertension	10.2
Influenza	10.2

<sup>a</sup> Adrenal insufficiency includes glucocorticoid deficiency, adrenocortical insufficiency acute, steroid withdrawal syndrome, cortisol free urine decreased, cortisol decreased. One-third of the subjects with this event had low cortisol levels indicative of Adrenal Insufficiency. The majority of subjects had normal cortisol levels suggesting a cortisol withdrawal syndrome.

<sup>b</sup> Fatigue includes lethargy, asthenia.

<sup>c</sup> Headache includes head discomfort.

<sup>d</sup> Edema includes edema peripheral, generalized edema, localized edema.

<sup>e</sup> Rash includes rash erythematous, rash generalized, rash maculopapular, rash papular.

<sup>f</sup> Dizziness includes dizziness postural.

<sup>g</sup> Abdominal pain includes abdominal pain upper, abdominal discomfort.

<sup>h</sup> Hypokalaemia includes blood potassium decreased.

<sup>i</sup> Hypotension includes orthostatic hypotension, blood pressure decreased, blood pressure diastolic decreased, blood pressure systolic decreased.

Other notable adverse reactions which occurred with a frequency less than 10% were: hirsutism (9.5%), acne (8.8%), dyspepsia (8%), insomnia (8%), anxiety (7.3%), depression (7.3%), gastroenteritis (7.3%), malaise (6.6%), tachycardia (6.6%), alopecia (5.8%), transaminases increased (4.4%), electrocardiogram QT prolongation (3.6%), and syncope (1.5%).

#### Description of Selected Adverse Reactions

##### Gastrointestinal Disorders

Gastrointestinal disorders, predominantly nausea, vomiting, diarrhea and abdominal pain were reported in 69% of patients. In many cases, the episodes were of short duration (1-2 days) and the severity was mild to moderate.

##### Hypocortisolism

Hypocortisolism was reported at a rate of 31% up to 12 weeks, and 18% from Weeks 12 to 26. The majority of cases were manageable by reducing the dose of ISTURISA and/or adding low-dose, short-term glucocorticoid therapy.

##### Changes in Pituitary Tumor Volume

An increase in the pituitary corticotroph tumor volume by greater than 20% from baseline was observed in 21/137 (15%) patients, while a decrease in tumor volume by greater than 20% from baseline was observed in 24/137 (18%) patients at Week 48. Eight patients discontinued because of an increase in tumor volume. There was no correlation between tumor volume increase and increase in adrenocorticotrophic hormone (ACTH). There was no specific pattern of timing of the tumor volume increase and no relationship with the total and the last dose of ISTURISA used in the study.

##### QTc Interval Prolongation

Adverse reactions of QT prolongation and clinically relevant ECG findings were reported. Five (4%) patients had an event of QT prolongation, 3 (2%) patients had a QTcF increase of > 60 ms from baseline, and 18 (13%) had a new QTcF value of > 450 ms [see *Clinical Pharmacology* (12.2)].

##### Accumulation of Adrenal Hormone Precursors

CYP11B1 inhibition by ISTURISA is associated with adrenal steroid precursor accumulation and testosterone increases [see *Warnings and Precautions* (5.3)]. The incidence of adverse reactions potentially related to accumulation of adrenal hormone precursors was 42%. Hypertension and hypokalemia were the most common adrenal hormone precursor-related adverse reactions and occurred in 14% of patients and 17% of patients, respectively; edema was reported in 7% of patients, elevated blood pressure in 15% of patients. All cases of hypokalemia responded to treatment with potassium supplementation and/or mineralocorticoid antagonist therapy (e.g., spironolactone). One patient discontinued the study because of hypokalemia. In male patients testosterone levels generally increased but remained within normal limits; all patients were asymptomatic with no values above upper limit of normal (ULN) at last available value. In female patients, mean testosterone levels increased above the normal range from baseline and reversed when treatment was interrupted. The testosterone increase was associated with mild to moderate cases of hirsutism (12%) or acne (11%) in a subset of female patients.

##### Other Abnormal Laboratory Findings

##### Decreased Absolute Neutrophil Count

Of the 137 patients from the 48-week study, 18 patients had at least one measured absolute neutrophil count below the normal limit, 2 patients had an adverse reaction of neutropenia. No concomitant infections and/or fever were reported in patients with decreased absolute neutrophil count.

##### Elevated Liver Function Tests

Liver enzyme elevations in patients treated with ISTURISA were infrequent, typically mild and reversed spontaneously or following dose adjustment. Most liver abnormal parameters occurred during the dose-titration period and no patients discontinued ISTURISA drug due to abnormal liver chemistry parameters. Five (4%) patients had ALT or AST > 3 x ULN during the 48-week clinical study.

## 7 DRUG INTERACTIONS

### 7.1 Effect of Other Drugs on ISTURISA

The effect of other drugs on ISTURISA can be found in Table 2.

**Table 2: Effect of Other Drugs on ISTURISA**

CYP3A4 Inhibitors	
<i>Clinical Impact:</i>	Concomitant use of ISTURISA with a strong CYP3A4 inhibitor (e.g., itraconazole, clarithromycin) may cause an increase in osilodrostat concentration and may increase the risk of ISTURISA-related adverse reactions [see <i>Clinical Pharmacology</i> (12.3)].
<i>Intervention:</i>	Reduce the dose of ISTURISA by half with concomitant use of a strong CYP3A4 inhibitor.

CYP3A4 and CYP2B6 Inducers	
<i>Clinical Impact:</i>	Concomitant use of ISTURISA with strong CYP3A4 and/or CYP2B6 inducers (e.g., carbamazepine, rifampin, phenobarbital) may cause a decrease in osilodrostat concentration and may reduce the efficacy of ISTURISA [see <i>Clinical Pharmacology</i> (12.3)].  Discontinuation of strong CYP3A4 and/or CYP2B6 inducers while using ISTURISA may cause an increase in osilodrostat concentration and may increase the risk of ISTURISA-related adverse reactions [see <i>Clinical Pharmacology</i> (12.3)].
<i>Intervention:</i>	During concomitant use of ISTURISA with strong CYP3A4 and CYP2B6 inducers, monitor cortisol concentration and patient's signs and symptoms. An increase in ISTURISA dosage may be needed.  Upon discontinuation of strong CYP3A4 and CYP2B6 inducers during ISTURISA treatment, monitor cortisol concentration and patient's signs and symptoms. A reduction in ISTURISA dosage may be needed.

### 7.2 Effect of ISTURISA on Other Drugs

ISTURISA should be used with caution when coadministered with CYP1A2 and CYP2C19 substrates with a narrow therapeutic index, such as theophylline, tizanidine, and S-mephenytoin [see *Clinical Pharmacology* (12.3)].

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

#### Risk Summary

There are no available data on osilodrostat use in pregnant women to evaluate for a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. There are risks to the mother and fetus associated with active Cushing's Syndrome during pregnancy (see *Clinical Considerations*).

No adverse developmental outcomes were observed in reproduction studies in pregnant rats and rabbits when exposed to osilodrostat during organogenesis at doses that produced maternal exposures of 7 and 0.5-times the 30 mg twice daily maximum clinical dose, by AUC. In rabbits, exposures associated with maternal toxicity at 7-times the maximum clinical dose resulted in decreased fetal viability. No adverse developmental outcomes were observed in a pre- and postnatal development study with administration of osilodrostat to pregnant rats from organogenesis through lactation at 8-times the 30 mg twice daily maximum clinical dose (see *Data*).

The estimated background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2%-4% and 15%-20%, respectively.

#### Clinical Considerations

##### Disease-Associated Maternal and/or Embryo/Fetal Risk

Active Cushing Syndrome during pregnancy has been associated with an increased risk of maternal and fetal morbidity and mortality (including gestational diabetes, gestational hypertension, pre-eclampsia, maternal death, miscarriage, fetal loss, and preterm birth).

#### Data

##### Animal Data

Osilodrostat administered to pregnant Wistar Han rats from gestation day 6-17 at doses of 0.5, 5, 50 mg/kg did not adversely affect embryo-fetal development up to 5 mg/kg (8-times the 30 mg twice daily maximum clinical dose, by AUC). Maternal toxicity, increased embryonic and fetal deaths, decreased fetal weights, and malformations occurred at 50 mg/kg (118-times the maximum clinical dose, by AUC).

Osilodrostat administered to pregnant New Zealand rabbits from gestation day 7-20 at doses of 3, 10, and 30 mg/kg did not adversely affect embryo-fetal development at 3 mg/kg (0.5-times the 30 mg twice daily maximum clinical dose, by AUC). Maternal toxicity, increased embryo resorption and decreased fetal viability was observed at ≥ 10 mg/kg (7-times the maximum clinical dose, by AUC).

Osilodrostat administered to Wistar Han rats from gestation day 6 through lactation day 20 at doses of 1, 5, and 20 mg/kg did not adversely impact behavioral, developmental, or reproductive parameters up to 5 mg/kg (~ 8 times the 30 mg twice daily maximum clinical dose, by AUC). Delayed parturition and dystocia in maternal rats and decreased pup survival were observed at 20 mg/kg (43-times the maximum clinical dose, by AUC).

### 8.2 Lactation

#### Risk Summary

There are no available data on the presence of osilodrostat in human or animal milk, the effects on the breastfed infant, or the effects on milk production. Because



of the potential for serious adverse reactions (such as adrenal insufficiency) in the breastfed infant, advise patients that breastfeeding is not recommended during treatment with ISTURISA and for one week after the final dose.

#### 8.4 Pediatric Use

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

#### 8.5 Geriatric Use

Of the 167 patients in clinical trials with ISTURISA, 10 (6%) were 65 years and older. There were no patients above 75 years of age. Based on the available data on the use of ISTURISA in patients older than 65 years, no dosage adjustment is required [see *Clinical Pharmacology* (12.3)].

#### 8.6 Renal Impairment

No dosage adjustment of ISTURISA in patients with impaired renal function is required [see *Dosage and Administration* (2.4), *Clinical Pharmacology* (12.3)]. In patients with moderate to severe renal impairment, UFC levels should be interpreted with caution due to reduced UFC excretion.

#### 8.7 Hepatic Impairment

Dosage adjustment is not required in patients with mild hepatic impairment (Child-Pugh A) but is required for patients with moderately impaired hepatic function (Child-Pugh B) and for patients with severe hepatic impairment (Child-Pugh C) [see *Dosage and Administration* (2.3), *Clinical Pharmacology* (12.3)]. More frequent monitoring of adrenal function may be required during dose titration in all patients with hepatic impairment.

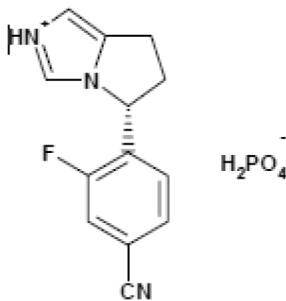
### 10 OVERDOSAGE

Overdosage may result in severe hypocortisolism. Signs and symptoms suggestive of hypocortisolism may include nausea, vomiting, fatigue, low blood pressure, abdominal pain, loss of appetite, dizziness, and syncope.

In case of suspected overdosage, ISTURISA should be temporarily discontinued, cortisol levels should be checked, and if necessary, corticosteroid supplementation should be initiated. Close surveillance may be necessary, including monitoring of the QT interval, blood pressure, glucose, fluid, and electrolyte until the patient's condition is stable.

### 11 DESCRIPTION

ISTURISA (osilodrostat) is a cortisol synthesis inhibitor.



The chemical name of osilodrostat is 4-[(5*R*)-6,7-Dihydro-5*H*-pyrrolo[1,2-*c*]imidazol-5-yl]-3-fluorobenzonitrile dihydrogen phosphate.

Molecular formula of osilodrostat salt (phosphate) form on anhydrous basis is: (C<sub>13</sub>H<sub>11</sub>FN<sub>3</sub>) (H<sub>2</sub>PO<sub>4</sub>). Relative molecular mass of osilodrostat phosphate salt form is 325.24 g/mol.

ISTURISA tablets for oral administration contains 1 mg, 5 mg, or 10 mg of osilodrostat equivalent to 1.4 mg, 7.2 mg, and 14.3 mg of osilodrostat phosphate respectively, and the following inactive ingredients: colloidal silicon dioxide, croscarmellose sodium, mannitol, microcrystalline cellulose, and magnesium stearate. The film coat is composed of hypromellose, titanium dioxide, ferric oxide (yellow), ferric oxide (red) (1 mg and 10 mg only), ferrosoferric oxide (10 mg only), polyethylene glycol 4000, and talc.

### 12 CLINICAL PHARMACOLOGY

#### 12.1 Mechanism of Action

Osilodrostat is a cortisol synthesis inhibitor. It inhibits 11β-hydroxylase (CYP11B1), the enzyme responsible for the final step of cortisol biosynthesis in the adrenal gland. In a Chinese hamster lung cell line V79-4 that overexpresses human CYP11B1, adrenodoxin and adrenodoxin reductase, osilodrostat inhibited the activity of human CYP11B1 dose-dependently with IC<sub>50</sub> values of 2.5 ± 0.1 nM (n = 4).

#### 12.2 Pharmacodynamics

A dose dependent increase was observed in 11-deoxycortisol, the cortisol precursor, and ACTH levels in patients with Cushing's disease.

#### Cardiac Electrophysiology

A thorough QT study in 86 male and female healthy volunteers showed a maximum mean placebo-corrected QTcF interval increase of 1.73 ms [90% confidence interval (CI): 0.15, 3.31] at a 10 mg dose, and 25.38 ms (90% CI: 23.53, 27.22) at a 150 mg dose (up to 2.5 times the maximum recommended dosage) [see *Warnings and Precautions* (5.2)].

The predicted mean placebo-corrected QTcF change from baseline at the highest recommended dose in clinical practice (30 mg twice daily) was estimated as 5.3 ms (90% CI: 4.2, 6.5), based on an interpolation of the data from the thorough QT Study and population PK analysis [see *Warnings and Precautions* (5.2)].

### 12.3 Pharmacokinetics

#### Absorption

Osilodrostat is absorbed with a time of maximum observed concentration (T<sub>max</sub>) of approximately 1 hour. Exposure (AUC<sub>inf</sub> and C<sub>max</sub>) slightly increases over dose-proportionally within the therapeutic dose range of 1 mg to 30 mg.

#### Effect of Food

In a healthy volunteer study (N = 20), subjects administered with a single, 30 mg oral dose of ISTURISA film-coated tablets with a high-fat meal resulted in reduction of AUC by 11% and C<sub>max</sub> by 21%, respectively. The median T<sub>max</sub> was delayed from 1 to 2.5 hours. These changes are not considered to be clinically significant, therefore ISTURISA can be administered with or without food.

#### Distribution

The median apparent volume of distribution of osilodrostat is approximately 100 L. Protein binding is low (36.4%). The osilodrostat blood-to-plasma concentration ratio is 0.85.

#### Elimination

The elimination half-life of osilodrostat is approximately 4 hours.

In an absorption, distribution, metabolism, and excretion study, the majority of the radioactivity dose of osilodrostat is eliminated in the urine (mean: 90.6% of administered dose) with only a minor amount eliminated in the feces (1.58% of dose). The low percentage of the dose eliminated in the urine as unchanged osilodrostat (5.2%) indicates that metabolism is the major clearance pathway in humans.

#### Metabolism

Multiple CYP enzymes (i.e., CYP3A4, CYP2B6, and CYP2D6) and UDP-glucuronosyltransferases contribute to osilodrostat metabolism and no single enzyme contributes greater than 25% to the total clearance. The metabolites are not expected to contribute to the pharmacological effect of osilodrostat.

#### Specific Populations

Age and gender have no significant impact on osilodrostat exposure in adults.

#### Race/Ethnicity

The relative bioavailability in Asian patients is approximately 20% higher compared to that of non-Asian, along with higher T<sub>max</sub> and C<sub>max</sub>, compared to other ethnicities. However, the difference is not clinically significant.

#### Patients with Renal Impairment

Osilodrostat exposure was similar in the three renal function groups [normal, severe, and end stage renal disease (ESRD) groups] and thus a study was not conducted in mild and moderate renal impairment groups. The results showed that the PK of osilodrostat was not influenced by varying degrees of renal impairment to any clinically significant extent [see *Dosage and Administration* (2.4), *Use in Specific Populations* (8.6)].

#### Patients with Hepatic Impairment

There was a trend of increasing AUC<sub>inf</sub> to osilodrostat in moderate and severe hepatic impaired subjects (geo-mean ratios are 1.44 and 2.66, respectively) as compared to normal subjects. Exposures (C<sub>max</sub> and AUC) of osilodrostat in the mild hepatic impairment group were similar to those in the normal group [see *Dosage and Administration* (2.5), *Use in Specific Populations* (8.7)].

#### Drug Interaction

In a healthy volunteer study (N = 20) using a single dose of osilodrostat (50 mg) and a probe drugs cocktail, osilodrostat showed inhibition potential on CYP1A2, CYP2C19, CYP2D6, and CYP3A4/5 isozymes with 2.5-, 1.9-, 1.5- and 1.5-fold increase in caffeine, omeprazole, dextromethorphan, and midazolam exposure, respectively [see *Drug Interactions* (7.1), (7.2)].

There was no significant impact of osilodrostat (30 mg twice daily for 12 days) on the exposure of oral contraceptives containing 0.03 mg estradiol and 0.15 mg levonorgestrel in healthy female subjects.

## 13 NONCLINICAL TOXICOLOGY

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

#### Carcinogenesis

Carcinogenicity studies were conducted in Wistar Han rats and CD1 mice. Hepatocellular adenomas and carcinomas occurred in male rats at  $\geq 10$  mg/kg and in females at 30 mg/kg (18- and 65-times the 30 mg twice daily maximum clinical dose, by AUC, respectively). Thyroid follicular adenoma/carcinoma was also observed in male rats at 30 mg/kg. Hepatocellular adenomas and carcinomas occurred in male mice at  $\geq 10$  mg/kg (6 times the maximum clinical dose, by AUC) but not in female mice at any dose  $\leq 30$  mg/kg (31 times the maximum clinical dose, by AUC). These findings are likely rodent specific and considered not relevant to humans. Genetic profiling studies support activation of hepatic constitutive androstane receptors as the likely tumorigenic mechanism in rodents and is not a significant concern for human risk at clinical exposure to osilodrostat.

#### Genotoxicity

Genotoxicity assays conducted *in vitro* in bacterial systems and *in vitro* and *in vivo* in mammalian systems with and without metabolic activation indicate that there is no genotoxic risk in humans with osilodrostat.

#### Impairment of Fertility

In a fertility and early embryonic-development study in Wistar Han rats, doses of 50 mg/kg (118 times the 30 mg twice daily maximum clinical dose, by AUC) resulted in changes to estrous cyclicity and impaired female fertility and embryo viability. No effect on reproductive performance in females was observed at 5 mg/kg (8 times the maximum clinical dose). Fertility and reproductive performance were not affected in male rats up to 50 mg/kg (77 times the maximum clinical dose, by AUC).

## 14 CLINICAL STUDIES

The safety and efficacy of ISTURISA was assessed in a 48-week, multicenter study (called the Core Period) that consisted of four study periods as follows:

- Period 1: 12-week, open-label, dose titration period
- Period 2: 12-week, open-label, maintenance treatment period
- Period 3: 8-week, double-blind, placebo-controlled, randomized withdrawal treatment period which provided the data for the primary efficacy endpoint
- Period 4: open-label treatment period of 14 to 24 weeks duration

The trial enrolled Cushing's disease patients with persistent or recurrent disease despite pituitary surgery or de novo patients for whom surgery was not indicated or who had refused surgery. The mean age at enrollment was 41 years; 77% of patients were female. There were 65% Caucasian, 28% Asian, 3% black, and 4% other race. Overall, 96% patients had received previous treatments for Cushing's disease prior to entering the study, of which 88% had undergone surgery. Persistence or recurrence of Cushing's disease was evidenced by the mean of three 24-hour UFC (mUFC)  $> 1.5$ x upper limit of normal (ULN). The mUFC (SD) at baseline was 1006 nmol/24 hr (1589), which corresponds to approximately 7 x ULN. The median mUFC at baseline was 476 nmol/24 hr, which corresponds to approximately 3.5 x ULN.

#### Period 1 (Week 1 to 12)

137 patients received a starting dose of 2 mg ISTURISA orally twice daily that could be titrated up to a maximum of 30 mg twice daily at no greater than 2-week intervals to achieve a mUFC within the normal range. Individual dose adjustments were based on mUFC. The dose was increased if mUFC was above ULN and was reduced if mUFC was below the lower limit of normal (LLN), or if the patient had symptoms consistent with hypocortisolism and mUFC was in the lower part of the normal range.

#### Period 2 (Week 13 to 24)

130 patients entered Period 2. The daily dose for patients that achieved a mUFC within the normal range in Period 1 was maintained during Period 2. Patients who did not require further dose increase, tolerated the drug, and had a mUFC  $\leq$  ULN at Week 24 (end of Period 2) were to be considered responders and eligible to enter the Randomization Withdrawal phase (Period 3). Patients whose mUFC became elevated during Period 2 could have their dose increased further, if tolerated, up to 30 mg twice daily. These patients were considered non-responders and did not enter Period 3 but continued open-label treatment together with the patients who did not achieve normal mUFC at Week 12 and were followed for long-term safety and response to treatment.

#### Period 3 (Week 26 to 34)

At Week 26, 71 patients were considered responders and were randomized 1:1 to continue receiving ISTURISA (n = 36) or to switch to placebo (n = 35) for 8 weeks. Patients were stratified at randomization according to dose received at Week 24 ( $\leq 5$  mg twice daily vs 5 mg twice daily) and history of pituitary irradiation (yes/no).

Patients were to remain on their assigned treatment and dose throughout Period 3 if mUFC were within the normal range. Blinded dose reduction or temporary discontinuation for safety or tolerability reasons were permitted. Dose increases were not permitted during Period 3. Patients with mUFC increase  $> 1.5$  x ULN or who required a dose increase were considered non-responders and discontinued from Period 3 but allowed to receive open-label treatment during Period 4.

#### Period 4 (Week 26 or 34 to 48)

This period included patients who were not eligible for randomization (n = 47) at Week 26, patients who were considered non-responders during Period 3 (n = 29), and patients who were considered responders during Period 3 (n = 41). Open-label treatment with ISTURISA continued in these patients until Week 48 when patients who maintained clinical benefit on ISTURISA, as judged by the Investigator, had an option to enter an extension period.

#### Efficacy Assessment

The primary efficacy endpoint of the study was to compare the percentage of complete responders at the end of the 8-week randomized withdrawal period (Period 3) between patients randomized to continue ISTURISA versus the patients switched to placebo. A complete responder for the primary endpoint was defined as a patient who had mUFC  $\leq$  ULN based on central laboratory result at the end of Period 3 (Week 34), and who neither discontinued randomized treatment or the study nor had any dose increase above their Week 26 dose.

The key secondary endpoint was to assess the complete responder rate at the end of Period 2 (Week 24). A complete responder for the key secondary endpoint was defined as a patient with mUFC  $\leq$  ULN at Week 24 who did not require an increase in dose above the level established at the end of Period 1 (Week 12). Patients who were missing mUFC assessment at Week 24 were counted as non-responders for the key secondary endpoint.

#### Results

At the end of Period 3, the percentage of complete responders for the primary endpoint was 86% and 29% in the ISTURISA and placebo groups, respectively (Table 3). The difference in percentage of complete responders between ISTURISA and placebo groups was 57%, with 95% two-sided CI of (38, 76). The 95% CI were not presented by individual strata due to the small sample sizes of some of these strata.

**Table 3: Percentage of Cushing's Disease Patients with Normal mUFC at End of Period 3 (8-week randomized withdrawal period)**

Primary Endpoint	ISTURISA (N = 36) n (%)	Placebo (N = 34) n (%)	Complete Responder Rate Difference (Differences in Percentages)
Complete responder rate at the end of the 8-week randomized withdrawal period (Week 34)	31 (86)	10 (29)	osilodrostat vs placebo
(95% CI)	(71, 95)	(15, 47)	57 (38, 76) 2-sided p-value < 0.001

Abbreviation: CI, Confidence Interval.

The key secondary endpoint, complete responder rate after 24 weeks of treatment with ISTURISA was achieved by 72/137 patients (52.6%) with 95% two-sided CI of (43.9, 61.1). The lower bound of this 95% CI exceeded 30%, the pre-specified threshold for statistical significance and minimum threshold for clinical benefit.

At Week 48, 91/137 patients (66%) had normal mUFC levels.

Variable decreases from baseline for blood pressure, glucose parameters, weight and weight circumference were observed at Week 48. However, because the study allowed initiation of anti-hypertensive and anti-diabetic medications and dose increases in patients already receiving such medications and the absence of a control group, the individual contribution of ISTURISA or of anti-hypertensive and anti-diabetic medication adjustments cannot be clearly established.

## 16 HOW SUPPLIED/STORAGE AND HANDLING

#### How Supplied

ISTURISA (osilodrostat) tablets are supplied as follows:

Tablet Strength	Description	Package Configuration	NDC No.
1 mg	Pale yellow, unscored, round, biconvex with beveled edge tablet, debossed "Y1" on one side and "NVR" on the other side.	Each carton contains 3 blister packs. Each blister pack contains 20 tablets.	55292-320-60
5 mg	Yellow, unscored, round, biconvex with beveled edge tablet, debossed "Y2" on one side and "NVR" on the other side.		55292-321-60
10 mg	Pale orange brown, unscored, round, biconvex with beveled edge tablet, debossed "Y3" on one side and "NVR" on the other side.		55292-322-60



### Storage and Handling

Store at room temperature between 68°F to 77°F (20°C to 25°C); excursions permitted 15°C to 30°C (59°F to 86°F); protect from moisture.

### **17 PATIENT COUNSELING INFORMATION**

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

#### Monitoring

Instruct patients on the importance of laboratory monitoring and adhering to their return visit schedule [see *Dosage and Administration (2.2, 2.3)*].

#### Hypocortisolism

Advise patients that ISTURISA is associated with hypocortisolism-related events. Advise patients to report symptoms of hypercortisolism to their healthcare provider [see *Warnings and Precautions (5.1)*].

#### QT Prolongation

Advise patients of the signs and symptoms of QT prolongation. Advise patients to contact their healthcare provider immediately for signs or symptoms of QT prolongation.

Advise patients that an ECG will be taken before treatment and periodically thereafter. Advise patients with cardiac disease and risk factors for QT prolongation that adjustments in cardiac medications may be made and electrolyte disturbances may require correction [see *Warnings and Precautions (5.2)*].

#### Adrenal Hormone Precursors/Androgens

Advise patients that elevation of adrenal hormone precursors may occur and lead to low potassium levels, worsening of hypertension, and edema. Advise patients to report the occurrence of these symptoms to their healthcare provider.

Advise patients that elevations of androgens may occur and may lead to hirsutism, hypertrichosis, and acne (in females). Advise patients to report the occurrence of these symptoms to their healthcare provider [see *Warnings and Precautions (5.3)*].

#### Lactation

Advise females not to breastfeed during treatment with ISTURISA and for at least one week after treatment [see *Use in Specific Populations (8.2)*].

Distributed by:  
Recordati Rare Disease, Inc.  
Lebanon, NJ USA 08833



© Recordati

**PATIENT INFORMATION**  
**ISTURISA® (is tur ee' sah)**  
**(osilodrostat) Tablets**

**What is the most important information I should know about ISTURISA?**

**ISTURISA can cause serious side effects, including:**

- **Low cortisol levels in your blood (hypocortisolism).**

Tell your healthcare provider right away if you experience **more than one** of the following symptoms, as these may be symptoms of very low cortisol level, known as adrenal insufficiency:

- nausea
- vomiting
- tiredness (fatigue)
- low blood pressure
- stomach (abdominal) pain
- loss of appetite
- dizziness

If you get symptoms of hypocortisolism while taking ISTURISA, your healthcare provider may change your dose or ask you to stop taking it.

**Heart problem or a heart rhythm problem, such as an irregular heartbeat which could be a sign of a heart problem called QT prolongation. Call your healthcare provider right away if you have irregular heartbeats.**

**See “What are the possible side effects of ISTURISA?” for more information about side effects.**

**What is ISTURISA?**

ISTURISA is a prescription medicine that is used to treat adults with Cushing's disease:

- who cannot have pituitary surgery, **or**
- who have had pituitary surgery, but the surgery did not cure their Cushing's disease

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

**Before you take ISTURISA, tell your healthcare provider about all of your medical conditions, including if you:**

- have or had heart problems, such as an irregular heartbeat, including a condition called prolonged QT syndrome (QT internal prolongation). Your healthcare provider will check the electrical signal of your heart (called an electrocardiogram) before you start taking ISTURISA, 1 week after starting ISTURISA, and as needed after that.
- have a history of low levels of potassium or magnesium in your blood.
- have liver problems.
- are breastfeeding or plan to breastfeed. It is not known if ISTURISA passes into your breast milk. You **should not** breastfeed if you take ISTURISA and for 1 week after stopping treatment.

**Tell your healthcare provider about all the medicines you take, including** prescription medicines, over-the-counter medicines, vitamins, and herbal supplements.

Especially tell your healthcare provider if you take medicines used to treat certain heart problems. Ask your healthcare provider if you are not sure whether your medicine is used to treat heart problems.

**How should I take ISTURISA?**

- Take ISTURISA exactly as your healthcare provider tells you. Your healthcare provider will tell you exactly how many tablets of ISTURISA to take. Do not change your dose or stop taking ISTURISA unless your healthcare provider tells you to.

- Start ISTURISA by taking 2 mg two times a day by mouth or as directed by your healthcare provider.
- After you have started treatment, your healthcare provider may change your dose, depending on how you respond to the treatment with ISTURISA.
- Take ISTURISA with or without food.
- If you miss a dose of ISTURISA, take the next dose at your regularly scheduled time.

**What are the possible side effects of ISTURISA?**

**ISTURISA may cause serious side effects, including:**

- **See “What is the most important information I should know about ISTURISA?”**
- **Increase in other adrenal hormone levels.** Your other adrenal hormones may increase when you take ISTURISA. Your healthcare provider may monitor you for the symptoms associated with these hormonal changes while you are taking ISTURISA:
  - **Low potassium (hypokalemia).**
  - **High blood pressure (hypertension).**
  - **Swelling (edema)** in the legs, ankles or other signs of fluid retention.
  - **Excessive facial or body hair growth (hirsutism).**
  - **Acne** (in women).

Call your healthcare provider if you have any of these side effects.

**The most common side effects of ISTURISA include:**

- very low cortisol levels (adrenal insufficiency)
- tiredness (fatigue)
- nausea
- headache
- swelling of the legs, ankles or other signs of fluid retention (edema)

These are not all of the possible side effects of ISTURISA.

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

**How should I store ISTURISA?**

- Store ISTURISA at room temperature between 68°F to 77°F (20°C to 25°C).
- Keep ISTURISA dry.

**Keep ISTURISA and all medicines out of the reach of children.**

**General information about the safe and effective use of ISTURISA.**

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

**What are the ingredients in ISTURISA?**

**Active ingredient:** osilodrostat phosphate

**Inactive ingredients:** colloidal silicon dioxide, croscarmellose sodium, mannitol, microcrystalline cellulose, and magnesium stearate. Tablet film-coating: hypromellose, titanium dioxide, ferric oxide (yellow), ferric oxide (red) (1 mg and 10 mg only) ferrousferrous oxide (10 mg only), polyethylene glycol 4000, and talc.

For more information, go to [www.ISTURISA.com](http://www.ISTURISA.com) or call 1-888-575-8344.

Distributed by:  
Recordati Rare Disease, Inc.  
Lebanon, NJ USA 08833

© Recordati

This Patient Information has been approved by the U.S. Food and Drug Administration.

Approved: March 2020

PP-IST-US-0010