

# CLINICAL STUDY PROTOCOL

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## **A Phase 2, Open-Label, Multiple-Dose Study to Evaluate the Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of NBI-74788 in Adult Subjects with Congenital Adrenal Hyperplasia**

Study No.: NBI-74788-CAH2001

Development Phase: Phase 2

Sponsor: Neurocrine Biosciences, Inc.  
12780 El Camino Real  
San Diego, CA 92130  
Telephone: (858) 617-7600  
Facsimile: (858) 617-7705

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**Accepted for the Sponsor:**

SPONSOR:

Neurocrine Biosciences, Inc.  
12780 El Camino Real  
San Diego, CA 92130  
Phone: (858) 617-7600  
Facsimile: (858) 617-7705

DocuSigned by:  


\_\_\_\_\_  
Date

\_\_\_\_\_  


**LIST OF SPONSOR PERSONNEL**

Neurocrine Biosciences, Inc.  
12780 El Camino Real  
San Diego, CA 92130

Medical Monitor: [REDACTED]  
Telephone: [REDACTED]  
Facsimile: [REDACTED]  
Cell Phone: [REDACTED]

[REDACTED]  
Telephone: [REDACTED]  
Facsimile: [REDACTED]

Serious Adverse Event Reporting:  
Telephone: [REDACTED]  
Facsimile: [REDACTED]  
Email: [REDACTED]

## 1. SYNOPSIS

**Title of study:** A Phase 2, Open-Label, Multiple-Dose Study to Evaluate the Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of NBI-74788 in Adult Subjects with Congenital Adrenal Hyperplasia

**Study number:** NBI-74788-CAH2001

**Study center(s):** Approximately 7 study centers in North America

**Objectives:**

- To assess the safety and tolerability of different dosing regimens of NBI-74788 in adult subjects with congenital adrenal hyperplasia (CAH).
- To evaluate the effect of repeated doses of NBI-74788 on endogenous levels of pharmacodynamic (PD) biomarkers in adult subjects with CAH.
- To evaluate the impact of different dosing regimens of NBI-74788 on endogenous levels of PD biomarkers.
- To evaluate plasma exposures following repeated doses of NBI-74788.

**Methodology:** This is a Phase 2, open-label, multiple-dose, dose-escalation study to assess the safety, tolerability, pharmacokinetics (PK), and PD of NBI-74788 in approximately 30 adult female and male subjects (18 to 50 years of age) with a documented medical diagnosis of classic 21-hydroxylase deficiency CAH. The study will include a sequential-cohort design with 4 NBI-74788 dosing regimens, with each regimen administered for 14 consecutive days:

- Cohort 1: NBI-74788 50 mg once daily with a bottle of vanilla-flavored [REDACTED] (~237 mL) at approximately 2200 hours.
- Cohort 2: NBI-74788 100 mg once daily with a bottle of vanilla-flavored [REDACTED] (~237 mL) at approximately 2200 hours.
- Cohort 3: NBI-74788 100 mg once daily with the evening meal at approximately 1900 hours.
- Cohort 4: NBI-74788 100 mg twice daily with breakfast at approximately 0700 hours and with the evening meal at approximately 1900 hours.

There will be an approximate 2-week period to evaluate safety and tolerability data before proceeding from Cohort 1 to Cohort 2. Subjects who previously completed the current study in Cohort 1 or Cohort 2 may reenroll to participate in Cohorts 3 or 4 (in addition to new subjects). The following table depicts the cohorts, doses, and number of subjects per cohort:

Cohort	NBI-74788 Dose	Approximate Dosing Time(s)	Number of Subjects
1	50 mg	2200 hours	8-10
2	100 mg	2200 hours	8-10
3	100 mg	1900 hours	8-10
4	100 mg	0700 and 1900 hours	Up to 8

Subjects must provide informed consent prior to any study-related procedures. Subjects will then be screened for eligibility to participate in the study for up to approximately 3 weeks (Days -28 to -8). Subjects who reenroll and have had a stable medication regimen for CAH since their last visit in this study do not have to undergo screening; those who reenroll and have had a change to their medication regimen for CAH must undergo a second screening visit. During screening, subjects will provide a single blood sample in the morning between 0700 and 1000 hours (prior to first morning dose of hydrocortisone) to determine their 17-hydroxyprogesterone (17-OHP) levels for study entry.

Eligible subjects who have a screening 17-OHP level  $\geq 1,000$  ng/dL will be admitted to the study center for 1 night and have baseline serial PD samples collected over a 24-hour period beginning in the evening of Day -7. Baseline serial PD samples will be collected at approximately 2145, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, and 2200 hours for Cohorts 1 and 2 and at approximately 1845, 2000, 2100, 2200, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, 1900, and 2200 hours for Cohorts 3 and 4. The subjects' usual morning dose of steroidal treatments will be administered after the 1000 hours PD sample is collected on Day -6. Subjects will be discharged on Day -6 after the last PD sample is collected.

Subjects in Cohorts 1 and 2 will be admitted to the study center on Days 1 and 14 (first and last day of dosing). Subjects will have a blood sample collected on Day 1 for [REDACTED]

[REDACTED] Baseline safety assessments will be collected on Day 1 prior to the first dose of study drug. Study drug (NBI-74788 50 mg or 100 mg) will be administered at approximately 2200 hours. The subjects' usual morning dose of concurrent steroidal treatments will be administered after the 12-hour postdose PK/PD samples are collected (ie, at approximately 1000 hours) on Day 2 and after the 16-hour postdose PK/PD samples are collected (ie, at approximately 1400 hours) on Day 15. Subjects will be discharged from the study center the evening on Days 2 and 15 following completion of all study-related procedures for those days. Prior to this discharge on Day 2, study drug will be administered at the study center at approximately 2200 hours. Study drug will then be self-administered nightly at home at approximately 2200 hours on Days 3 to 13. Subjects will take their usual morning dose of concurrent steroidal treatments at approximately 1000 hours on Days 3 to 14. On Day 7 during the treatment period, PK, PD, and safety assessments will be conducted in an outpatient setting at the study center.

Subjects in Cohorts 3 and 4 will have a blood sample collected on Day 1 for [REDACTED] (only for subjects who have not previously participated in Cohorts 1 or 2). Baseline safety assessments will be collected on Day 1 prior to the first dose of study drug. For Cohort 3, study drug (NBI-74788 100 mg) will be administered at home on Days 1 to 13 at approximately 1900 hours with each subject's evening meal. For Cohort 4, study drug (NBI-74788 100 mg) will be administered at home on Days 2 to 14 at approximately 0700 hours with each subject's breakfast and on Days 1 to 13 at approximately 1900 hours with each subjects' evening meal. For both cohorts, the Day 14 evening dose will be administered at the study site. Subjects will take their usual morning dose of concurrent steroidal treatments at approximately 1000 hours on Days 1 to 14. On Day 7 during the treatment period, PK, PD, and safety assessments will be conducted in an outpatient setting at the study center. Subjects will be admitted to the study center on Day 14 (last day of dosing). On Day 14, subjects will receive study drug in the study center at approximately 1900 hours with a standard (moderate fat/moderate calorie) evening meal. The subjects' usual morning dose of concurrent steroidal treatments will be administered after PK/PD samples are collected at approximately 1400 hours on Day 15. Subjects will be discharged from the study center the evening on Day 15 following completion of all study-related procedures.

For all cohorts, follow-up visits on Days 21, 28, and 35 will be conducted at the study center or the subject's home by a qualified home healthcare provider (based on the subject's preference). A final study visit will be conducted at the study site approximately 5 weeks after the last dose of study drug (on Day 49 or early termination). There will be a visit window of -8 hours for day 7, -8 hours/+3 days for Days 21, 28, and 35, and +7 days for the final study visit. Safety, tolerability, PK, and PD will be assessed at scheduled times throughout the study.

#### Dose Escalation Procedure

Cohort 1 will consist of approximately 8 to 10 subjects who will receive a daily dose of NBI-74788 50 mg at approximately 2200 hours for 14 days (subjects will receive study drug at the site on Days 1, 2, and 14, and self-administer study drug at home on Days 3 to 13). Following the completion of Day 15 assessments for all subjects in Cohort 1, a medical monitor will review the accumulated safety

and tolerability results to ensure there are no safety concerns with proceeding to the 100 mg dose (Cohorts 2 and 3), and to determine if a maximum tolerated dose (MTD) has been reached. If the MTD is reached, no dose escalation will occur. There will be an approximate 2-week period between Cohorts 1 and 2 to accommodate this safety review. A similar procedure will be used prior to proceeding to the 100 mg twice daily dose (Cohort 4).

If the medical monitor determines that it is safe to proceed to NBI-74788 100 mg, subjects in Cohort 2 will be administered NBI-74788 100 mg daily for 14 days. Dosing for Cohorts 3 and 4 may begin simultaneously with Cohort 2.

During the 14-day dosing period for any cohort, dosing may be postponed or halted if one or more subjects experience a severe or serious adverse event (AE), or if the type, frequency, or severity of AEs becomes unacceptable. If dosing is postponed, the medical monitor will review all available safety, tolerability, and PK data before allowing any further subjects to receive study drug.

**Study Population:** Approximately 30 adult female and male subjects (18 to 50 years of age) with a documented medical diagnosis of classic 21-hydroxylase deficiency CAH, who meet all protocol eligibility criteria, will be enrolled. Subjects who previously completed the current study in Cohort 1 or Cohort 2 may reenroll to participate in Cohorts 3 or 4 (in addition to new subjects).

**Duration of treatment:** The expected duration of study participation for each subject is approximately 11 weeks, including up to approximately 3 weeks for screening, a 24-hour PD baseline period (approximately 7 days prior to the first day of dosing), 14 days of dosing, and a follow-up period of approximately 5 weeks. The total duration of the study will be an additional 8 to 11 weeks for subjects who reenroll.

**Test product, dose, and mode of administration:** NBI-74788 will be supplied as capsules containing 50 mg of NBI-74788 [REDACTED] for oral administration. Doses of NBI-74788 are 50 mg and 100 mg, administered in oral capsule form. Each dose of study drug for Cohorts 1 and 2 is to be administered with a bottle of vanilla-flavored [REDACTED] (~237 mL) at approximately 2200 hours. Each dose of study drug for Cohort 3 is to be administered with each subject's evening meal at approximately 1900 hours. Each dose of study drug for Cohort 4 is to be administered with each subject's breakfast at approximately 0700 hours and evening meal at approximately 1900 hours (ie, a total daily dose of 200 mg).

**Reference therapy, dose, and mode of administration:** Not applicable.

**CRITERIA FOR EVALUATION:**

Cohorts 1 and 2

Blood samples to evaluate 24-hour PD baseline will be collected on Days -7 to -6 at approximately 2145, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, and 2200 hours. Blood samples to evaluate PK and PD parameters of NBI-74788 will be collected on Days 1 to 2 and Days 14 to 15 at: 15 minutes predose and at 1, 2, 3, 4, 6, 8, 10, 12, 14, 16, 20, and 24 hours postdose; Day 7 (at approximately 24 hours postdose); Days 21, 28, and 35 (at approximately 168, 336, and 504 hours postdose); and at the final study visit (Day 49 or early termination).

Cohorts 3 and 4

Blood samples to evaluate 24-hour PD baseline will be collected on Days -7 to -6 at approximately 1845, 2000, 2100, 2200, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, 1900, and 2200 hours. Blood samples to evaluate PK and PD parameters of NBI-74788 will be collected on Days 14 to 15 at the following times (for Cohort 4, all times are relative to evening dosing unless otherwise indicated): 15 minutes predose and at 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose; Day 7 (at 24 hours postdose for Cohort 3 or at 12 hours post morning dose but prior to the evening dose for Cohort 4); Days 21, 28, and 35 (at approximately 168, 336, and 504 hours postdose); and at the final study visit (Day 49 or early termination).

**Pharmacokinetics:**

The following plasma PK parameters will be calculated for NBI-74788 and metabolites:

- Area under the plasma concentration versus time curve from 0 hours to last measurable concentration ( $AUC_{0-t_{last}}$ )
- Area under the plasma concentration versus time curve from 0 to 24 hours ( $AUC_{0-24}$ ) (Cohorts 1, 2, and 3)
- Area under the plasma concentration versus time curve from 0 to 12 hours ( $AUC_{0-12}$ ) (Cohort 4)
- Maximum plasma concentration ( $C_{max}$ )
- Time to maximum plasma concentration ( $t_{max}$ )
- Delay time between time of dosing and time of appearance of measurable test article ( $T_{lag}$ )
- Terminal half-life ( $t_{1/2}$ )
- Apparent terminal rate constant ( $\lambda_z$ )
- Apparent mean residence time (MRT)

Additional PK parameters for Day 14 only:

- Average plasma concentration at steady state ( $C_{avg}$ )
- Percent fluctuation at steady state (%fluctuation)
- Accumulation index at steady state
- Apparent systemic clearance after oral administration (CL/F) (NBI-74788 only)

**Pharmacodynamics:**

██████████ Morning 17-OHP (serum; ng/dL) from the 0600, 0800, and 1000 hour samples (8-, 10-, and 12-hour postdose samples from Cohorts 1 and 2 and 11-, 13-, and 15-hour postdose samples from Cohorts 3 and 4).

██████████ 17-OHP at all other times, androstenedione (serum; ng/dL), testosterone (serum; ng/dL), cortisol (serum;  $\mu$ g/dL), and adrenocorticotrophic hormone (plasma ACTH; pg/mL).

**Safety:**

Safety and tolerability will be monitored throughout the study and will include the following assessments:

- Adverse events
- Clinical laboratory tests - clinical chemistry (including creatine kinase, myoglobin, total and conjugated bilirubin), hematology, coagulation (prothrombin time, aPTT, d-dimer, fibrinogen), and urinalysis (including quantitative myoglobin, casts and crystals)
- Vital signs
- Physical examinations (including musculoskeletal exam)
- 12-lead electrocardiograms (ECGs)
- Columbia-Suicide Severity Rating Scale (C-SSRS)
- Brief Psychiatric Rating Scale (BPRS)

**Statistical methods:** Safety, PK, and PD variables will be summarized within each cohort using descriptive statistics. Summaries of PD measures will include both observed values and changes from predose.



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## 2. LIST OF ABBREVIATIONS AND DEFINITIONS OF TERMS

17-OHP	17-hydroxyprogesterone
ACTH	Adrenocorticotrophic hormone
AE	Adverse event
ALT	Alanine aminotransferase
aPTT	Activated partial thromboplastin time
AST	Aspartate aminotransferase
AUC	Area under the plasma concentration versus time curve
AUC <sub>0-12</sub>	AUC from 0 to 12 hours
AUC <sub>0-24</sub>	AUC from 0 to 24 hours
β-hCG	β-human chorionic gonadotropin
BMI	Body mass index
BPRS	Brief Psychiatric Rating Scale
CAH	Congenital adrenal hyperplasia
CDS	Clinical Drug Safety
CFR	Code of Federal Regulations
CK	Creatine kinase
C <sub>max</sub>	Maximum plasma concentration
CRF1	Corticotropin releasing factor 1
C-SSRS	Columbia-Suicide Severity Rating Scale
█	█
ECG	Electrocardiogram
eCRF	Electronic Case Report Form
EDC	Electronic data capture
FDA	Food and Drug Administration
FSH	Follicle stimulating hormone
GCP	Good Clinical Practice
GGT	Gamma-glutamyl transferase
HBsAg	Hepatitis B surface antigen
HCV-Ab	Hepatitis C virus antibody
HIV-Ab	Human immunodeficiency virus antibody
ICF	Informed consent form
ICH	International Conference on Harmonisation
INR	International normalized ratio

IRB	Institutional Review Board
MedDRA	Medical Dictionary for Regulatory Activities
MTD	Maximum tolerated dose
NBI	Neurocrine Biosciences, Inc.
NOAEL	No adverse effect dose level
PD	Pharmacodynamic(s)
P-gp	P-glycoprotein
PK	Pharmacokinetic(s)
QTcF	Corrected QT interval using Fridericia's formula
SAE	Serious adverse event
SAP	Statistical analysis plan
TEAE	Treatment-emergent adverse event
$t_{\max}$	Time to maximum plasma concentration
ULN	Upper limit of normal
US	United States

### 3. ETHICS

The study will be conducted in accordance with Neurocrine Biosciences, Inc. (NBI) standards that meet regulations relating to Good Clinical Practice (GCP). These standards respect the following guidelines:

- Good Clinical Practice: Consolidated Guideline (International Conference on Harmonisation [ICH] of Technical Requirements for the Registration of Pharmaceuticals for Human Use [current version]).
- United States (US) Code of Federal Regulations (CFR) dealing with clinical studies (21 CFR parts 50, 54, 56, 312, and 314).
- Canada Food and Drugs Act and Regulations (FDAR) Part C, Division 5: Drugs for Clinical Trials Involving Human Subjects.
- Guidance for Clinical Trial Sponsors: Clinical Trial Applications, Effective March 2016, Health Canada Therapeutic Products Directorate, Health Products and Food Branch.

The ethical requirements of Institutional Review Boards/Ethics Committees (IRBs/ECs) and the informed consent forms (ICFs) are discussed in [Section 13](#).

### 4. INTRODUCTION

#### 4.1. Background

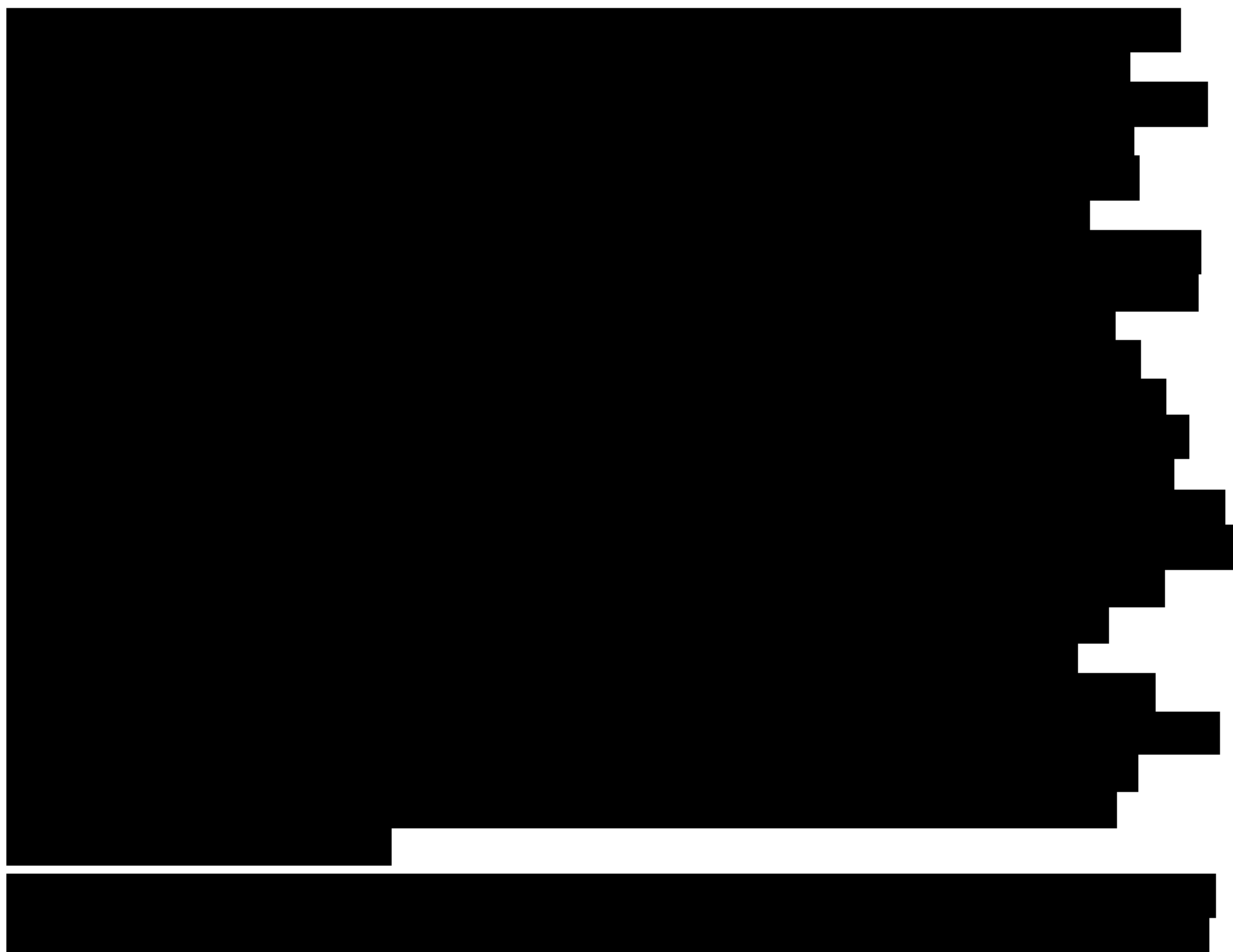
NBI-74788 is a selective corticotropin releasing factor 1 (CRF1) receptor antagonist that is being developed by NBI as a novel oral treatment for classic congenital adrenal hyperplasia (CAH) due to 21-hydroxylase deficiency, a condition that results in little or no cortisol biosynthesis. One clinical manifestation of the absence of cortisol is the lack of feedback inhibition of pituitary adrenocorticotropic hormone (ACTH) secretion. Increased ACTH levels cause adrenal hyperplasia and the enzyme mutation causes a shunting of cortisol precursor steroids to alternate pathways. Most notably, the shunting of androgens leads to virilization and other developmental complications in females and the over-accumulation of ACTH is associated with the formation of testicular adrenal rest tumors in males. In addition, since the same enzyme (21-hydroxylase) is used in the pathway for the biosynthesis of the mineralocorticoids, a number of these patients suffer from aldosterone deficiency which can result in dehydration and death due to salt-wasting. The prevalence of classic 21-hydroxylase deficiency CAH in the US general population, based on newborn screening, has been documented as 1:10,000 to 1:20,800 ([Trakakis et al., 2010](#); [Hertzberg et al., 2011](#)), a figure that supports orphan drug designation.

Pediatric patients from birth through adolescence, and females in particular, appear to be the most vulnerable population of CAH sufferers and represent the subgroup of patients with the greatest unmet medical need ([Cheng and Speiser, 2012](#); [Merke and Poppas, 2013](#)). Excessive androgen production in these younger patients results in early onset puberty and adrenarche, changes in skeletal maturation patterns, short stature caused by premature growth plate fusion, as well as significant hirsutism and acne problems. While survival is properly ensured through steroid replacement strategies based on physiologic dosing of glucocorticoids (eg, hydrocortisone) and mineralocorticoids (eg, fludrocortisone), these doses are often inadequate to

suppress the accumulating ACTH and overproduction of progestogens and androgens (eg, 17-hydroxyprogesterone [17-OHP], androstenedione, and testosterone). The uncontrolled symptoms of androgen excess, indeed, have a substantial impact on the day-to-day functioning and development of these patients. The glucocorticoid doses required to treat the androgen excess are typically well above the normal physiologic dose used for cortisol replacement alone (as in patients with Addison's disease). This increased exposure to glucocorticoids can lead to iatrogenic Cushing's syndrome, increased cardiovascular risk factors, glucose intolerance, reduced growth velocity, and decreased bone mineral density in CAH patients (Elneave et al., 2008; King et al., 2006; Migeon and Wisniewski, 2001).

Corticotropin releasing factor is a hypothalamic hormone released directly into the hypophyseal portal vasculature and acts on specific CRF1 receptors on corticotropes in the anterior pituitary to stimulate the release of ACTH. Blockade of these receptors has been shown to decrease the release of ACTH in both animals and humans. Therefore, compounds that block CRF1 receptors have the potential to directly inhibit the excessive ACTH release that occurs in CAH and thereby allow for normalization of androgen production while using lower, more physiologic doses of hydrocortisone. The novel CRF1 receptor antagonist, NBI-74788, may provide an important therapeutic approach to treat patients with CAH.

#### 4.2. NBI-74788





[REDACTED]

[REDACTED]

[REDACTED]

### 4.3. Study and Dose Rationale

The present Phase 2 study is designed to evaluate the safety, tolerability, pharmacokinetics (PK), and pharmacodynamics (PD) of NBI-74788 in adult subjects with classic CAH following multiple doses at bedtime of 50 mg and 100 mg administered in a sequential-cohort design (Cohorts 1 and 2). A third cohort of subjects (Cohort 3) will receive NBI-74788 100 mg administered with the evening meal. Additionally, Cohort 4 will receive NBI-74788 100 mg twice daily with breakfast and the evening meal to compare the impact of these different dosing schedules on endogenous PD biomarker response.

Furthermore, the anticipated steady state exposures with the selected NBI-74788 doses, using the predicted  $C_{max}$  and AUC, are within the acceptable safety margins defined by the nonclinical toxicology studies that have been conducted to date.

## 5. OBJECTIVES

The objectives of the study are as follows:

- To assess the safety and tolerability of different dosing regimens of NBI-74788 in adult subjects with CAH.
- To evaluate the effect of repeated doses of NBI-74788 on endogenous levels of PD biomarkers in adult subjects with CAH.
- To evaluate the impact of different dosing regimens of NBI-74788 administration on endogenous levels of PD biomarkers.
- To evaluate plasma exposures following repeated doses of NBI-74788.

## 6. STUDY DESIGN

### 6.1. Overview of Study Design

This is a Phase 2, open-label, multiple-dose, dose-escalation study to assess the safety, tolerability, PK, and PD of NBI-74788 in approximately 30 adult female and male subjects (18 to 50 years of age) with a documented medical diagnosis of classic 21-hydroxylase

deficiency CAH. The study will include a sequential-cohort design with 4 NBI-74788 dosing regimens, with each regimen administered for 14 consecutive days:

- Cohort 1: NBI-74788 50 mg once daily with a bottle of vanilla-flavored [REDACTED] (~237 mL) at approximately 2200 hours.
- Cohort 2: NBI-74788 100 mg once daily with a bottle of vanilla-flavored [REDACTED] (~237 mL) at approximately 2200 hours.
- Cohort 3: NBI-74788 100 mg once daily with the evening meal at approximately 1900 hours.
- Cohort 4: NBI-74788 100 mg twice daily with breakfast at approximately 0700 hours and with the evening meal at approximately 1900 hours.

There will be an approximate 2-week period to evaluate safety and tolerability data before proceeding from Cohort 1 to Cohort 2. Subjects who previously completed the current study in Cohort 1 or Cohort 2 may reenroll to participate in Cohorts 3 or 4 (in addition to new subjects).

Table 1 depicts the cohorts, doses, and number of subjects per cohort.

**Table 1: Dose Cohorts, Doses, and Number of Subjects**

Cohort	NBI-74788 Dose	Approximate Dosing Time(s)	Number of Subjects
1	50 mg	2200 hours	8-10
2	100 mg	2200 hours	8-10
3	100 mg	1900 hours	8-10
4	100 mg	0700 and 1900 hours	Up to 8

Subjects must provide informed consent prior to any study-related procedures. Subjects will then be screened for eligibility to participate in the study for up to approximately 3 weeks (Days -28 to -8). Subjects who reenroll and have had a stable medication regimen for CAH since their last visit in this study do not have to undergo screening; those who reenroll and have had a change to their medication regimen for CAH must undergo a second screening visit. During screening, subjects will provide a single blood sample in the morning between 0700 and 1000 hours (prior to first morning dose of hydrocortisone) to determine their 17-OHP levels for study entry.

Eligible subjects who have a screening 17-OHP level  $\geq 1,000$  ng/dL will be admitted to the study center for 1 night and have baseline serial PD samples collected over a 24-hour period beginning in the evening of Day -7. Baseline serial PD samples will be collected at approximately 2145, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, and 2200 hours for Cohorts 1 and 2 and at approximately 1845, 2000, 2100, 2200, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, 1900, and 2200 hours for Cohorts 3 and 4. The subjects' usual morning dose of steroidal treatments will be administered after the 1000 hours PD sample is collected on Day -6. Subjects will be discharged on Day -6 after the last PD sample is collected.

Subjects in Cohorts 1 and 2 will be admitted to the study center on Days 1 and 14 (first and last day of dosing). Subjects will have a blood sample collected on Day 1 for [REDACTED].

Baseline safety assessments will be collected on Day 1 prior to the first dose of study drug. Study drug (NBI-74788 50 or 100 mg) will be administered at approximately 2200 hours. The subjects' usual morning dose of concurrent steroidal treatments will be administered after the 12-hour postdose PK/PD samples are collected (ie, at approximately 1000 hours) on Day 2 and after the 16-hour postdose PK/PD samples are collected (ie, at approximately 1400 hours) on Day 15. Subjects will be discharged from the study center the evening on Days 2 and 15 following completion of all study-related procedures for those days. Prior to this discharge on Day 2, study drug will be administered at the study center at approximately 2200 hours. Study drug will then be self-administered nightly at home at approximately 2200 hours on Days 3 to 13. Subjects will take their usual morning dose of concurrent steroidal treatments at approximately 1000 hours on Days 3 to 14. On Day 7 during the treatment period, PK, PD, and safety assessments will be conducted in an outpatient setting at the study center.

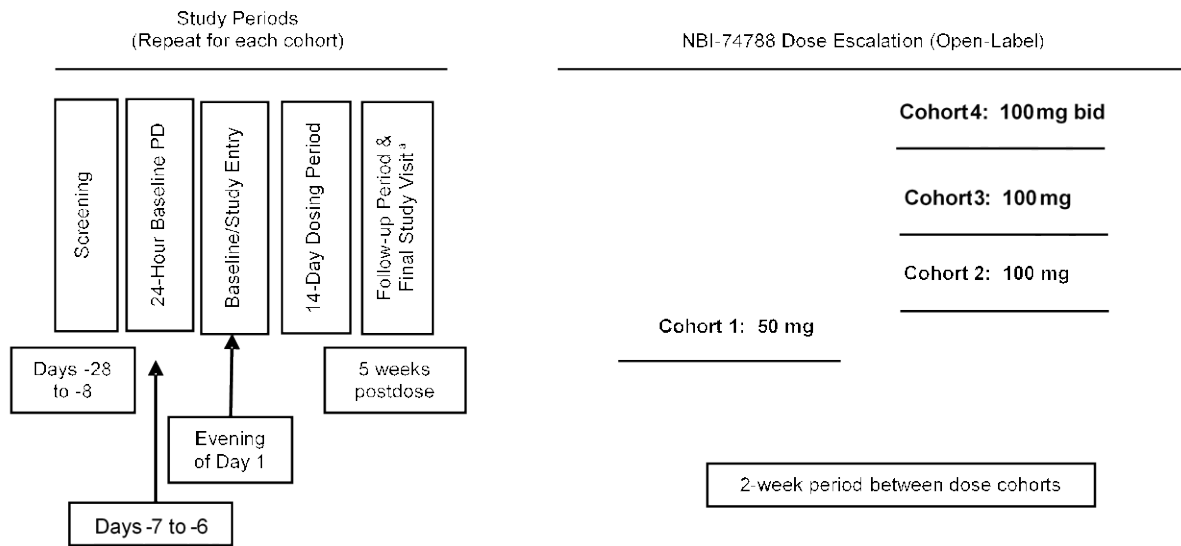
Subjects in Cohorts 3 and 4 will have a blood sample collected on Day 1 for [REDACTED] (only for subjects who have not previously participated in Cohorts 1 or 2). Baseline safety assessments will be collected on Day 1 prior to the first dose of study drug. For Cohort 3, study drug (NBI-74788 100 mg) will be administered at home on Days 1 to 13 at approximately 1900 hours with each subject's evening meal. For Cohort 4, study drug (NBI-74788 100 mg) will be administered at home on Days 2 to 14 at approximately 0700 hours with each subject's breakfast and on Days 1 to 13 at approximately 1900 hours with each subject's evening meal. For both cohorts, the Day 14 evening dose will be administered at the study site. Subjects will take their usual morning dose of concurrent steroidal treatments at approximately 1000 hours on Days 1 to 14. On Day 7 during the treatment period, PK, PD, and safety assessments will be conducted in an outpatient setting at the study center. Subjects will be admitted to the study center on Day 14 (last day of dosing). On Day 14, subjects will receive study drug in the study center at approximately 1900 hours with a standard (moderate fat/moderate calorie) evening meal. The subjects' usual morning dose of concurrent steroidal treatments will be administered after PK/PD samples are collected at approximately 1400 hours on Day 15. Subjects will be discharged from the study center the evening on Day 15 following completion of all study-related procedures.

Standard meals and snacks will be provided by the study center during the in-patient stays.

For all cohorts, follow-up visits on Days 21, 28, and 35 will be conducted at the study center or the subject's home by a qualified home healthcare provider (based on the subject's preference). A final study visit will be conducted at the study site approximately 5 weeks after the last dose of study drug (on Day 49 or early termination). There will be a visit window of -8 hours for Day 7, -8 hours/+3 days for Days 21, 28, and 35, and +7 days for the final study visit. Safety, tolerability, PK, and PD will be assessed at scheduled times throughout the study.

The study design schematic is shown in [Figure 1](#).

**Figure 1: Study Design Schematic**



bid=twice daily.

Visits on Days 21 (+3 days), 28 (+3 days), and 35 (+3 days); final study visit on Day 49 (+7 days) or early termination.

## 6.2. Dose Escalation Procedure

Cohort 1 will consist of approximately 8 to 10 subjects who will receive a daily dose of NBI-74788 50 mg at approximately 2200 hours for 14 days (subjects will receive study drug at the site on Days 1, 2, and 14, and self-administer study drug at home on Days 3 to 13). Following the completion of Day 15 assessments for all subjects in Cohort 1, a medical monitor will review the accumulated safety and tolerability results to ensure there are no safety concerns with proceeding to the 100 mg dose (Cohorts 2 and 3), and to determine if a maximum tolerated dose (MTD) has been reached. If the MTD is reached, no dose escalation will occur. There will be an approximate 2-week period between Cohorts 1 and 2 to accommodate this safety review. A similar procedure will be used prior to proceeding to the 100 mg twice daily dose (Cohort 4).

If the medical monitor determines that it is safe to proceed to NBI-74788 100 mg, subjects in Cohort 2 will be administered NBI-74788 100 mg daily for 14 days. Dosing for Cohorts 3 and 4 may begin simultaneously with Cohort 2.

During the 14-day dosing period for any cohort, dosing may be postponed or halted if one or more subjects experience a severe or serious adverse event (AE), or if the type, frequency, or severity of AEs becomes unacceptable. If dosing is postponed, the medical monitor will review all available safety, tolerability, and PK data before allowing any further subjects to receive study drug.

## 7. STUDY POPULATION

This study will be conducted in approximately 30 adult female and male subjects (18 to 50 years of age) with a documented medical diagnosis of classic 21-hydroxylase deficiency CAH. Subjects must meet all inclusion criteria and no exclusion criteria in order to be enrolled. Subjects who previously completed the current study in Cohort 1 or Cohort 2 may reenroll to participate in Cohorts 3 or 4 (in addition to new subjects). Subjects who reenroll and have had a stable medication regimen for CAH since their last visit in this study do not have to undergo screening; those who reenroll and have had a change to their medication regimen for CAH must undergo a second screening visit.

### 7.1. Subject Inclusion Criteria

To participate in this study, subjects must meet the following criteria:

1. Female or male between 18 to 50 years of age inclusive.
2. Be in good general health and expected to complete the clinical study as designed. Subjects with stable medical conditions (other than CAH) and subjects on a stable medication regimen for these conditions will be allowed to participate.
3. Have a medically confirmed diagnosis of classic 21-hydroxylase deficiency CAH that includes a serum 17-OHP level of  $\geq 1,000$  ng/dL at screening. A medically confirmed diagnosis will be satisfied if the subject is able to provide a medical record of the CAH diagnosis or the investigator can confirm the CAH diagnosis.
4. Have a serum cortisol concentration  $< 5$   $\mu\text{g/dL}$  and ACTH concentration  $\geq 20$  pg/mL at screening, consistent with the classic 21-hydroxylase deficiency CAH diagnosis.
5. Be on a stable regimen of steroidal treatment for CAH for a minimum of 30 days before the start of the 24-hour PD baseline period (Day -7) that is expected to remain stable throughout the study. [REDACTED]
6. Female subjects of childbearing potential must agree to use contraception consistently from screening until the final study visit or 30 days after the last dose of study drug, whichever is longer.

7. Male subjects must agree to use contraception consistently from screening until the final study visit or 90 days after the last dose of study drug, whichever is longer.

8. Female subjects of childbearing potential must have a negative serum  $\beta$ -human chorionic gonadotropin ( $\beta$ -hCG) pregnancy test at screening and negative urine pregnancy test at the start of the 24-hour PD baseline period (Day -7) and on Day 1.
9. Have a body mass index (BMI)  $>18$  and  $\leq 45$  kg/m<sup>2</sup> (BMI is defined as the subject's weight in kg divided by the square of the subject's height in meters).
10. Have a negative urine drug screen (negative for amphetamines, barbiturates, benzodiazepine, phencyclidine, cocaine, opiates, or cannabinoids) and alcohol breath test at screening, at the start of the 24-hour PD baseline period (Day -7), and on Day 1 (Day -7 and Day 1 eligibility based on urine drug screen and alcohol breath test conducted at the site). Subjects with a positive urine drug screen due to a stable medication regimen to treat a medical condition may participate in the study. Use of cannabis products for a substantiated medical use (ie, not recreational use) is permitted during the study.
11. Be able to understand and provide written/dated informed consent before enrolling in the study, and be willing to adhere to the study regimen and study procedures described in the protocol and ICF, including all requirements at the study center and return for follow-up visits.
12. Be willing to provide authorization for access to personal health information in conjunction with US Health Insurance Portability and Accountability Act (HIPAA).

## 7.2. Subject Exclusion Criteria

Subjects will be excluded from the study if they:

1. Have a clinically significant unstable medical condition or chronic disease (including history of neurological, hepatic, renal, cardiovascular, gastrointestinal, pulmonary, psychiatric or endocrine disease [excluding CAH]), or malignancy that could confound interpretation of study outcome.
2. Had a clinically significant illness within 30 days of screening.

3. Have a known or suspected diagnosis of any of the other known classic forms of CAH including 11 $\beta$ -hydroxylase deficiency, 17 $\beta$ -hydroxylase deficiency, 3 $\beta$ -hydroxysteroid dehydrogenase deficiency, P450 side-chain cleavage deficiency, or P450 oxidoreductase deficiency.
4. Have a history that includes bilateral adrenalectomy, hypopituitarism, or other condition requiring daily therapy with orally administered glucocorticoids (eg, asthma, arthritis, or systemic lupus erythematosus).
5. Have any clinically significant acute or unstable chronic abnormal finding in physical examination, neurological assessment, vital signs, ECGs, or clinical laboratory tests, as determined by the investigator.
6. Are pregnant or lactating females.
7. Have a history of epilepsy or serious head injury (eg, traumatic brain injury or post-concussive syndrome).
8. Have a known history of long QT syndrome or cardiac tachy-arrhythmia.
9. Have a screening or baseline (Day 1) average ECG corrected QT interval using Fridericia's formula (QTcF) of >450 msec (males) or >470 msec (females) or the presence of any clinically significant cardiac abnormality.
10. Have an exaggerated pharmacological sensitivity (ie, hypersensitivity) to any corticotropin releasing hormone antagonists.
11. Test positive at screening for hepatitis B surface antigen (HBsAg), hepatitis C antibody (HCV-Ab), or human immunodeficiency virus antibody (HIV-Ab), or have a history of a positive result.
12. Have a recent history ( $\leq$ 1 year before screening) of alcohol or drug abuse, or current evidence of substance dependence or abuse criteria.
13. [REDACTED]
14. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]
15. [REDACTED]
16. [REDACTED]  
[REDACTED]  
[REDACTED]



17. [REDACTED]
18. Used any other investigational drug within 30 days or 5 half-lives (whichever is longer) before initial screening, or plans to use an investigational drug (other than the study drug) during the study. Subjects who previously completed the current study in Cohort 1 or Cohort 2 may reenroll to participate in Cohorts 3 or 4; these subjects do not need to meet this criterion with respect to NBI-74788.
19. Use of any excluded concomitant medication (refer to [Section 8.10.1](#)) within 30 days of screening.
20. Have a significant risk of suicidal or violent behavior. Subjects with any suicidal ideation of type 4 (active suicidal ideation with some intent to act, without specific plan) or type 5 (active suicidal ideation with specific plan and intent) in the past 6 months before screening or lifetime history of suicidal behavior based on the Columbia-Suicide Severity Rating Scale (C-SSRS) should be excluded.
21. Have ingested foods containing poppy seeds within 7 days before screening, the start of the 24-hour PD baseline period (Day -7), and Day 1.
22. [REDACTED]
23. Have had a blood loss  $\geq 550$  mL or donated blood within 30 days before at the start of the 24-hour PD baseline period (Day -7).
24. In the Investigator's opinion, the subject is not capable of adhering to the protocol requirements.
25. Have a known allergy, hypersensitivity, or intolerance to any component of vanilla-flavored [REDACTED] (eg, soy) (Cohorts 1 and 2 only).

### **7.3. Subject Identification and Replacement**

Subjects will be identified during the study by their initials and a unique subject identification number (a hyphen may be used if the subject has no middle name). The subject initials and identification number will be written on all source documentation and laboratory specimens, and populated on all electronic Case Report Forms (eCRFs). Subjects who discontinue from the study will not be replaced.

### **7.4. Randomization**

This is a single-arm study.

## **8. STUDY EVALUATIONS**

### **8.1. Schedule of Assessments**

[Table 2](#) summarizes the frequency and timing of all study assessments and procedures for Cohorts 1 and 2; [Table 3](#) summarizes the frequency and timing of all study assessments and procedures for Cohorts 3 and 4. Subjects will provide written informed consent before any study-related procedures are conducted, including the cessation of prohibited concomitant medications. Subject-related activities and events including specific instructions, procedures, concomitant medications, dispensing of study drug, and descriptions of AEs will be recorded in the appropriate source documents and eCRFs.

**Table 2: Schedule of Assessments for Cohorts 1 and 2**

Procedure	Screening	PD Baseline	14-Day Dosing Period							Follow-Up Period (-8 hour/+3 day window for each visit)			Final Study Visit <sup>a</sup>		
			Study Day	-28 to -8	-7 to -6 <sup>b</sup>	DAY 1 <sup>b</sup>	2	3-6	7	8-13	14	15		21	28
Informed consent	X														
Inclusion/exclusion criteria	X	Update	Update												
Medical history	X	Update	Update												
Physical examination	X		X	X			X			X					X
Height	X														
Weight	X		X							X					X
Vital Signs	X	X	X	X <sup>c</sup>			X		X	X <sup>c</sup>					X
12-lead ECG <sup>d</sup>	X		X	X					X	X					X
Pregnancy test <sup>e</sup>	X (s)	X (u)	X (u)						X (u)						X (u)
Screening FSH (postmenopausal females only)	X														
Serology (HBsAg, HCV-Ab, HIV-Ab)	X														
Morning 17-OHP <sup>f</sup>	X														
Clinical laboratory tests <sup>g</sup>	X		X				X			X					X
Urine drug screen & alcohol breath test <sup>h</sup>	X	X	X						X						
PD blood samples <sup>i</sup>	X	X	X	X			X		X	X	X	X	X	X	X
Brief Psychiatric Rating Scale <sup>j</sup>			X	X					X	X					X
C-SSRS	X		X							X					X
PK plasma samples <sup>k</sup>			X	X			X		X	X	X	X	X	X	X
Study drug dosing <sup>l</sup>			X	X	X	X	X	X	X						
Subject study diary <sup>m</sup>			X	X	X	X	X	X	X						
Study drug reconciliation <sup>n</sup>							X		X						
AE monitoring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prior and concomitant medications	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Center visit	X						X				X <sup>o</sup>	X <sup>o</sup>	X <sup>o</sup>	X <sup>o</sup>	X
Inpatient center stay		X	X	X					X	X					

Definitions and footnotes are on the next page.

Definitions: 17-OHP=17-hydroxyprogesterone; AE=adverse event; C-SSRS=Columbia Suicide Severity Rating Scale; [REDACTED];

ECG=electrocardiogram; FSH=follicle stimulating hormone; HBsAg=hepatitis B surface antigen; HCV-Ab=hepatitis C virus antibody; HIV-Ab=human immunodeficiency virus antibody; PD=pharmacodynamic; PK=pharmacokinetic; s=serum; u=urine.

- <sup>a</sup> Final study visit for subjects who complete the study (or early termination). The final study visit will be conducted approximately 5 weeks (+7 days) after the last dose of study drug.
- <sup>b</sup> Day 1 occurs 1 week after the Day -7 visit. Day 1 assessments will be collected predose unless otherwise noted below. Safety assessments collected predose on Day 1 will serve as the baseline.
- <sup>c</sup> Vital signs will be collected on Days 2 and 15 between 8-10 and 22-24 hours postdose (ie, morning and evening).
- <sup>d</sup> A standard 12-lead ECG will be conducted in triplicate (1-3 minutes apart) after subject has rested supine for at least 5 minutes at screening, at pre-evening dose on Days 1 and 14, prior to visit completion or discharge on Days 2 and 15, and at the final study visit (Day 49 or early termination).
- <sup>e</sup> Pregnancy tests will be conducted for female subjects of childbearing potential. Serum pregnancy tests will be conducted at screening and urine pregnancy tests will be conducted on Day -7, prior to dosing on Day 1 (for eligibility), Day 14, and at the final study visit (Day 49 or early termination).
- <sup>f</sup> Blood sample for determination of study-qualifying levels of 17-OHP should be collected between 0700 and 1000 hours (prior to first morning dose of hydrocortisone).
- <sup>g</sup> Includes hematology, clinical chemistry (including creatine kinase, myoglobin, total and conjugated bilirubin), coagulation (prothrombin time, activated partial thromboplastin time [aPTT], d-dimer, fibrinogen), and urinalysis (including quantitative myoglobin, casts and crystals). Samples will be obtained under nonfasted conditions.
- <sup>h</sup> Urine testing kits will be provided by the central laboratory to confirm negative drug screen prior to Day -7 PD collection and Day 1 dosing. Separate urine sample will also be sent to the central laboratory for analysis.
- <sup>i</sup> Blood samples for analyses of 17-OHP, androstenedione, testosterone, cortisol, and adrenocorticotropic hormone [ACTH] will be collected at the following times:
- Screening (for all biomarkers except 17-OHP).
  - Day -7 to Day -6 (24-hour PD baseline): at approximately 2145, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, and 2200 hours.
  - Days 1 and 14: 15 minutes predose and at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
  - Days 2 and 15: 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
  - Day 7: approximately 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose.
  - Days 21, 28, and 35: approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days) and 504 hours (-8 hours/+3 days) postdose.
  - Final study visit (Day 49 [+7 days] or early termination).
- <sup>j</sup> The Brief Psychiatric Rating Scale will be administered predose on Days 1 and 14, on Days 2 and 15, and at the final study visit (Day 49 or early termination).
- <sup>k</sup> Pharmacokinetic plasma samples for analyses of NBI-74788 will be collected at the following times:
- Days 1 and 14: 15 minutes predose and at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
  - Days 2 and 15: 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
  - Day 7: 24 hours (-8 hour window) after the Day 6 dose, prior to the Day 7 dose.
  - Days 21, 28, and 35: approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days) and 504 hours (-8 hours/+3 days) postdose.
  - Final study visit (Day 49 [+7 days] or early termination).
- <sup>l</sup> Study drug will be administered at the study center on Days 1, 2, and 14, and at home on Days 3 to 13 at approximately 2200 hours. Sites should call subjects between the Day 3 and Day 7 visits to remind them to complete the subject study diary, check on compliance, and remind them to bring subject study diary and remaining study drug to the Day 7 visit.

- <sup>m</sup> Subject study diary will be provided to subjects on Day 1 prior to dosing. The date and time of study drug administration, the number of capsules taken, and confirmation that [REDACTED] was taken will be documented each day (subjects should finish consuming the entire bottle of [REDACTED] within 30 minutes of taking study drug). The diary will be reviewed for completeness at the Day 7 visit. The subject will return the diary at the Day 14 visit.
- <sup>n</sup> A compliance check will be performed by counting the number of capsules returned.
- <sup>o</sup> Subjects will have the option of having the Days 21, 28, and 35 assessments conducted at home by a qualified home healthcare provider or at the study center.

**Table 3: Schedule of Assessments for Cohorts 3 and 4**

Procedure	Screening <sup>a</sup>	PD Baseline	14-Day Dosing Period						Follow-Up Period (-8 hour/+3 day window for each visit)			Final Study Visit <sup>b</sup>
	Study Day -28 to -8	-7 to -6 <sup>c</sup>	DAY 1 <sup>c</sup>	2-6	7	8-13	14	15	21	28	35	49 (+7 days)
Informed consent	X	X <sup>d</sup>										
Inclusion/exclusion criteria	X	Update <sup>e</sup>	Update <sup>e</sup>									
Medical history	X	Update <sup>e</sup>	Update <sup>e</sup>									
Physical examination	X		X		X			X				X
Height	X											
Weight	X		X					X				X
Vital Signs	X	X	X		X		X	X <sup>f</sup>				X
12-lead ECG <sup>g</sup>	X		X				X	X				X
Pregnancy test <sup>h</sup>	X (s)	X (s/u)	X (u)				X (u)					X (u)
Screening FSH (postmenopausal females only)	X											
Serology (HBsAg, HCV-Ab, HIV-Ab)	X											
Morning 17-OHP <sup>j</sup>	X											
Clinical laboratory tests <sup>k</sup>	X		X		X			X				X
Urine drug screen & alcohol breath test <sup>l</sup>	X	X	X				X					
PD blood samples <sup>m</sup>	X	X			X		X	X	X	X	X	X
Brief Psychiatric Rating Scale <sup>n</sup>			X				X	X				X
C-SSRS	X	X <sup>o</sup>	X					X				X
PK plasma samples <sup>p</sup>					X		X	X	X	X	X	X
Study drug dosing <sup>q</sup>			X	X	X	X	X					
Subject study diary <sup>r</sup>			X	X	X	X	X					
Study drug reconciliation <sup>s</sup>					X		X					
AE monitoring	X	X	X	X	X	X	X	X	X	X	X	X
Prior and concomitant medications	X	X	X	X	X	X	X	X	X	X	X	X
Center visit	X		X		X				X <sup>t</sup>	X <sup>t</sup>	X <sup>t</sup>	X
Inpatient center stay		X					X	X				

Definitions and footnotes are on the next page.

Definitions: 17-OHP=17-hydroxyprogesterone; AE=adverse event; C-SSRS=Columbia-Suicide Severity Rating Scale; [REDACTED];

ECG=electrocardiogram; FSH=follicle stimulating hormone; HBsAg=hepatitis B surface antigen; HCV-Ab=hepatitis C virus antibody; HIV-Ab=human immunodeficiency virus antibody; PD=pharmacodynamic; PK=pharmacokinetic; s=serum; u=urine.

- <sup>a</sup> Subjects who reenroll and have had a stable medication regimen for CAH since their last visit in this study do not have to undergo screening; those who reenroll and have had a change to their medication regimen for CAH must undergo a second screening visit.
- <sup>b</sup> Final study visit for subjects who complete the study (or early termination). The final study visit will be conducted approximately 5 weeks (+7 days) after the last dose of study drug.
- <sup>c</sup> Day 1 occurs 1 week after the Day -7 visit. Day 1 assessments will be collected predose unless otherwise noted below. Safety assessments collected predose on Day 1 will serve as the baseline.
- <sup>d</sup> Only for subjects who reenroll and who do not undergo screening.
- <sup>e</sup> Only for subjects who undergo screening.
- <sup>f</sup> Vital signs will be collected on Day 15 between 8-10 and 22-24 hours postdose (ie, morning and evening) (for Cohort 4, timing is relative to evening dosing).
- <sup>g</sup> A standard 12-lead ECG will be conducted in triplicate (1-3 minutes apart) after subject has rested supine for at least 5 minutes at screening, at pre-evening dose on Days 1 and 14, prior to visit completion or discharge on Day 15, and at the final study visit (Day 49 or early termination).
- <sup>h</sup> Pregnancy tests will be conducted for female subjects of childbearing potential. For subjects who undergo screening, serum pregnancy tests will be conducted at screening and urine pregnancy tests will be conducted on Day -7, prior to dosing on Day 1 (for eligibility), Day 14, and at the final study visit (Day 49 or early termination). For subjects who do not undergo screening, serum pregnancy tests will be conducted on Day -7 and urine pregnancy tests will be conducted prior to dosing on Day 1 (for eligibility), Day 14, and at the final study visit (Day 49 or early termination).
- <sup>i</sup> Only for subjects who have not previously enrolled in Cohorts 1 or 2.
- <sup>j</sup> Blood sample for determination of study-qualifying levels of 17-OHP should be collected between 0700 and 1000 hours (prior to first morning dose of hydrocortisone).
- <sup>k</sup> Includes hematology, clinical chemistry (including creatine kinase, myoglobin, total and conjugated bilirubin), coagulation (prothrombin time, activated partial thromboplastin time [aPTT], d-dimer, fibrinogen), and urinalysis (including quantitative myoglobin, casts and crystals). Samples will be obtained under nonfasted conditions.
- <sup>l</sup> Urine testing kits will be provided by the central laboratory to confirm negative drug screen prior to Day -7 PD collection and Day 1 dosing. Separate urine sample will also be sent to the central laboratory for analysis.
- <sup>m</sup> Blood samples for analyses of 17-OHP, androstenedione, testosterone, cortisol, and adrenocorticotropic hormone [ACTH] will be collected at the following times:
  - Screening (for all biomarkers except 17-OHP).
  - Day -7 to Day -6 (24-hour PD baseline): at approximately 1845, 2000, 2100, 2200, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, 1900, and 2200 hours.
  - Day 7: 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose (Cohort 3); 12 hours post morning dose but prior to the evening dose for Cohort 4 (-4 hour window).
  - Day 14 (for Cohort 4, all times are relative to the evening dose): 15 minutes predose and at 1, 2, 3, 4, and 5 hours postdose ( $\pm 5$  minute window).
  - Day 15 (for Cohort 4, all times are relative to the evening dose): 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose ( $\pm 15$  minute window).
  - Days 21, 28, and 35 (for Cohort 4, all times are relative to the evening dose): approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days) and 504 hours (-8 hours/+3 days) postdose.
  - Final study visit (Day 49 [+7 days] or early termination).
- <sup>n</sup> The Brief Psychiatric Rating Scale will be administered pre-evening dose on Day 14, on Day 15, and at the final study visit (Day 49 or early termination).

- ° Only for subjects who reenroll and who do not undergo screening. The Screening/Baseline version should be administered.
- <sup>p</sup> Pharmacokinetic plasma samples for analyses of NBI-74788 will be collected at the following times:
  - Day 7: 24 hours (-8 hour window) after the Day 6 dose, prior to the Day 7 dose (Cohort 3); 12 hours post morning dose but prior to the evening dose for Cohort 4 (-4 hour window).
  - Day 14 (for Cohort 4, all times are relative to evening dosing): 15 minutes predose and at 1, 2, 3, 4, and 5 hours postdose ( $\pm 5$  minute window).
  - Day 15 (for Cohort 4, all times are relative to evening dosing): 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose ( $\pm 15$  minute window).
  - Days 21, 28, and 35 (for Cohort 4, all times are relative to evening dosing): approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days) and 504 hours (-8 hours/+3 days) postdose.
  - Final study visit (Day 49 [+7 days] or early termination).
- <sup>q</sup> For Cohort 3, study drug will be administered at home on Days 1 to 13 at approximately 1900 hours with each subject's evening meal. For Cohort 4, study drug will be administered at home on Days 2 to 14 at approximately 0700 hours with each subject's breakfast and on Days 1 to 13 at approximately 1900 hours with each subject's evening meal. For both cohorts, the Day 14 evening dose will be administered at the study site. Sites should call subjects between the Day 3 and Day 7 visits to remind them to complete the subject study diary, check on compliance, and remind them to bring subject study diary and remaining study drug to the Day 7 visit.
- <sup>r</sup> Subject study diary will be provided to subjects on Day 1 prior to dosing. The date and time of study drug administration, the number of capsules taken, and confirmation that study drug was taken with breakfast (Cohort 4 only) and the evening meal will be documented each day. The diary will be reviewed for completeness at the Day 7 visit. The subject will return the diary at the Day 14 visit.
- <sup>s</sup> A compliance check will be performed by counting the number of capsules returned.
- <sup>t</sup> Subjects will have the option of having the Days 21, 28, and 35 assessments conducted at home by a qualified home healthcare provider or at the study center.



## 8.2. Screening and Baseline Assessments

### 8.2.1. Serum 17-Hydroxyprogesterone

A blood sample will be collected at screening (approximately 5 mL) to measure morning serum 17-OHP between 0700 and 1000 hours (prior to first morning dose of hydrocortisone) to determine subject eligibility. Subjects must have serum 17-OHP of  $\geq 1,000$  ng/dL at screening to be eligible for study enrollment.

For Cohorts 3 and 4, subjects who are not required to undergo screening will not have this sample collected.

### 8.3. Pharmacokinetic Assessments

For the 24-hour serial blood draws, blood samples should be collected using an intravenous catheter inserted into a peripheral vein. If a catheter becomes unusable, either a new catheter may be inserted, or the remaining samples may be collected by venipuncture. Individual blood samples on other days should be collected by venipuncture. The catheter will be inserted in the evening and removed before the subject is discharged from the study center the following evening.

For postdose blood sample collection performed while subjects are asleep, every effort should be made to minimize disturbances to the subjects.

PK plasma samples for analyses of NBI-74788 will be collected at the following times for Cohorts 1 and 2:

- Days 1 and 14: 15 minutes predose and at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
- Days 2 and 15: 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
- Day 7: approximately 24 hours ( $-8$  hour window) after the Day 6 dose and prior to the Day 7 dose.
- Days 21, 28, and 35: approximately 168 hours ( $-8$  hours/ $+3$  days), 336 hours ( $-8$  hours/ $+3$  days), and 504 hours ( $-8$  hours/ $+3$  days) postdose.
- Final study visit (Day 49 [ $+7$  days] or early termination).

PK plasma samples for analyses of NBI-74788 will be collected at the following times for Cohorts 3 and 4 (for Cohort 4, all times are relative to evening dosing unless otherwise noted):

- Day 7: 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose for Cohort 3; 12 hours post morning dose but prior to the evening dose for Cohort 4 (-4 hour window).
- Day 14: 15 minutes predose and at 1, 2, 3, 4, and 5 hours postdose ( $\pm 5$  minute window).
- Day 15: 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose ( $\pm 15$  minute window).
- Days 21, 28, and 35: approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose.
- Final study visit (Day 49 [+7 days] or early termination).

A PK sample should be collected from subjects who terminate early. The exact time of sampling in hour and minutes will be recorded.

The blood samples will be processed to plasma, which will be stored as specified in the laboratory manual. These samples will be shipped on dry ice to the central laboratory for analysis. Refer to the laboratory manual for additional details.

Plasma samples remaining at the end of the study may be used for exploratory assessments of NBI-74788 metabolites.

At any time during the study, an in-home service (phlebotomist) may be available under certain circumstances for blood draws.

#### **8.4. Pharmacodynamic Assessments: Pharmacodynamic Biomarkers**

Approximately 7 mL of blood will be collected for each sample. Pharmacodynamic biomarker samples will be sent to a central laboratory which will provide instructions and supplies to the study staff before study initiation.

Blood samples to measure cortisol (serum;  $\mu\text{g/dL}$ ), 17-OHP (serum;  $\text{ng/dL}$ ), androstenedione (serum;  $\text{ng/dL}$ ), testosterone (serum;  $\text{ng/dL}$ ), and ACTH (plasma;  $\text{pg/mL}$ ) for Cohorts 1 and 2 will be collected at:

- Screening (for all biomarkers except 17-OHP; [Section 8.2.1](#) describes sample collection for 17-OHP at screening).
- Day -7 to -6 (24-hour PD baseline): at approximately 2145, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, and 2200 hours.
- Days 1 and 14: 15 minutes predose and 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
- Days 2 and 15: 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
- Day 7: approximately 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose.
- Days 21, 28, and 35: approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose.
- Final study visit (Day 49 [+7 days] or early termination).

Blood samples to measure cortisol (serum;  $\mu\text{g/dL}$ ), 17-OHP (serum;  $\text{ng/dL}$ ), androstenedione (serum;  $\text{ng/dL}$ ), testosterone (serum;  $\text{ng/dL}$ ), and ACTH (plasma;  $\text{pg/mL}$ ) for Cohorts 3 and 4

will be collected at (for Cohort 4, all times are relative to evening dosing unless otherwise noted):

- Screening (for all biomarkers except 17-OHP; [Section 8.2.1](#) describes sample collection for 17-OHP at screening) (only for subjects who undergo screening).
- Day -7 to -6 (24-hour PD baseline): at approximately 1845, 2000, 2100, 2200, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, 1900, and 2200 hours.
- Day 7: 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose for Cohort 3; 12 hours post morning dose but prior to the evening dose for Cohort 4 (-4 hour window).
- Day 14: 15 minutes predose and at 1, 2, 3, 4, and 5 hours postdose ( $\pm 5$  minute window).
- Day 15: 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose ( $\pm 15$  minute window).
- Days 21, 28, and 35: approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose.
- Final study visit (Day 49 [+7 days] or early termination).

For the 24-hour serial blood draws, blood samples should be collected using an intravenous catheter inserted into a peripheral vein. Individual venipunctures can be used if there are complications with the intravenous catheter. Individual blood samples on other days should be collected by venipuncture.

Samples may be used for an exploratory assessment of changes in biomarkers associated with treatment with NBI-74788 (eg, metabolomics; these biomarkers do not include testing for specific genes). Data collected as part of this exploratory analysis will not be reported as part of the study results.

At any time during the study, an in-home service (phlebotomist) may be available for blood draws.

## **8.5. Safety Assessments**

Concomitant medication use and AEs will be monitored throughout the study as described in [Section 8.10.1](#) and [Section 10](#), respectively. Additional safety assessments are described in the following sections.

Appropriate psychiatric evaluation and intervention will be provided for any treatment-emergent suicidal behavior or clinically significant suicidal ideation.

For any abnormal safety assessment deemed clinically significant, the investigator will perform appropriate follow-up assessments (eg, repeat analysis), until the cause of the abnormality is determined and/or until the value returns to baseline (or within normal limits), or the investigator deems the abnormality to be of no clinical significance.

### **8.5.1. Vital Sign Measurements**

Vital sign measurements, including orthostatic systolic and diastolic blood pressures, orthostatic heart rate, respiratory rate, and oral body temperature will be conducted. Blood pressure will be

measured using a calibrated automatic blood pressure cuff after the subject has been supine for at least 5 minutes and after approximately 2 minutes of standing. The automatic blood pressure cuff will also provide pulse rate measurement.

Vital sign measurements will be collected once per day (other than on Days 2 and 15, as indicated below) and will generally be obtained before scheduled blood sample collection. Vital sign measurements will be collected at the following times (for Cohort 4, all times are relative to evening dosing):

- Screening.
- Day -7 (PD baseline).
- Day 1.
- Days 2 and 15 (between 8-10 and 22-24 hours postdose [ie, morning and evening]) (Day 2 only applies to Cohorts 1 and 2).
- Day 7.
- Day 14.
- Day 49 (or early termination).

#### **8.5.2. Medical History and Physical Examination**

A medical history will be taken at the screening visit and updated on Day -7 and Day 1 (only for subjects who undergo screening).

A complete physical examination including weight will be conducted at screening, on Day 1, Day 2 (Cohorts 1 and 2 only), Day 7, Day 15, and Day 49 (or final study visit for subjects who terminate early). The complete physical examination will consist of an assessment of general appearance, skin and mucosae, head, eyes, ears, nose, throat, neck (including thyroid), lymph nodes, chest/lungs, cardiovascular, abdomen, extremities, neurological and musculoskeletal systems. Height and weight will be measured with subjects not wearing shoes. Height will be measured only at screening. Weight will be measured at screening, on Day 1, Day 15, and Day 49 (or final study visit for subjects who terminate early).

#### **8.5.3. 12-Lead Electrocardiogram**

12-lead ECG will be conducted in triplicate (1-3 minutes apart) after the subject has rested supine for at least 5 minutes at the following times (for Cohort 4, all times are relative to evening dosing):

- Screening.
- Days 1 and 14 (predose).
- Days 2 and 15: prior to visit completion or discharge (Day 2 only applies to Cohorts 1 and 2).
- Day 49 (or final study visit for subjects who terminate early).

The ECG parameters that will be assessed include heart rate, PR interval, QRS duration, QT interval, and QTcF (machine readings). Additionally, the occurrence of de- and re-polarization and rhythm disorders or other abnormalities will be assessed. Based on the review of these

parameters, the investigator or designee will note if the ECG is Normal, Abnormal Not Clinically Significant, or Abnormal Clinically Significant. If the ECG is Abnormal Clinically Significant, the investigator will provide a description of the abnormality recorded on the AE eCRF.

#### 8.5.4. Clinical Laboratory Assessments

All clinical laboratory assessments will be conducted by a central laboratory, which will provide instructions and supplies to the study staff before study initiation. The instructions will be included in a laboratory manual. The laboratory test battery will include routine and screening laboratory tests. Laboratory samples will be collected in the following approximate amounts: 7.5 mL for hematology (including 4.5 mL for coagulation parameters), 5 mL for clinical chemistry, 10 mL for serology, 7 mL for PD, 2 mL for PK, and 4 mL for [REDACTED] (a total of approximately 458.5 mL of blood will be collected over the course of the study from each subject).

Clinical laboratory assessments will be conducted at the following times:

- Screening.
- Day 1.
- Day 7.
- Day 15.
- Day 49 (or final study visit for subjects who terminate early).

The following clinical safety laboratory assays will be conducted:

Hematology: complete blood count including white blood cell count with differential, red blood cell count, hemoglobin, hematocrit, platelet count, mean corpuscular hemoglobin (MCH), mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC), red cell distribution width (RDW), mean platelet volume (MPV), [REDACTED]

Clinical chemistry: sodium, potassium, calcium, magnesium, chloride, blood urea nitrogen, bicarbonate, creatinine, uric acid, albumin, alkaline phosphatase, lactate dehydrogenase, AST, ALT, gamma-glutamyl transferase (GGT), CK, myoglobin, total and conjugated bilirubin, total cholesterol, triglycerides, total protein, and glucose.

Urinalysis: specific gravity, nitrite, ketones, protein, urobilinogen, glucose, bilirubin, leukocyte esterase, occult blood, pH, and quantitative myoglobin. Microscopic examination of sediment will include evaluation for casts and crystals.

The following additional laboratory tests will be conducted:

FSH: Conducted at screening (postmenopausal females only).

Serology: Blood will be collected for HBsAg, HCV-Ab, and HIV-Ab testing at screening. The results of the HIV-Ab testing will be retained by the study site under confidential restriction.

Urine drug screen and alcohol breath test: The urine drug screen will test for amphetamines, barbiturates, phencyclidine, benzodiazepines, cannabinoids, cocaine, and opiates. A urine drug screen and alcohol breath test will be conducted at screening, Day -7, Day 1, and Day 14. Urine

testing kits will be provided by the central laboratory to confirm negative drug screen prior to Day -7 PD collection and Day 1 dosing. Separate urine sample will also be sent to the central laboratory for analysis.

Pregnancy test: Pregnancy tests will be conducted for female subjects of childbearing potential. For subjects who undergo screening, serum pregnancy tests ( $\beta$ -hCG) will be conducted at screening and urine pregnancy tests will be conducted on Day -7, prior to dosing on Day 1 (for eligibility), Day 14, and at the final study visit (Day 49 or early termination). For subjects who do not undergo screening, serum pregnancy tests ( $\beta$ -hCG) will be conducted on Day -7 and urine pregnancy tests will be conducted prior to dosing on Day 1 (for eligibility), Day 14, and at the final study visit (Day 49 or early termination).

For any abnormal tests deemed clinically significant, repeat analysis will be conducted until the cause of the abnormality is determined or until the value returns to baseline (or within normal limits), or the investigator deems the abnormality to be of no clinical significance.

At any time during the study, an in-home service (phlebotomist) may be available under certain circumstances for blood draws.

#### **8.5.5. Brief Psychiatric Rating Scale**

The Brief Psychiatric Rating Scale (BPRS) is a clinician-rated tool designed to assess the severity of psychopathology in patients with schizophrenia and other psychotic disorders ([Overall and Gorham, 1962, 1988](#)). The BPRS includes 18 items that address somatic concern, anxiety, emotional withdrawal, conceptual disorganization, guilt feelings, tension, mannerisms and posturing, grandiosity, depressive mood, hostility, suspiciousness, hallucinatory behaviors, motor retardation, uncooperativeness, unusual thought content, blunt affect, excitement, and disorientation. The severity of each of the 18 items of the BPRS is rated on a scale of 1 (not present) to 7 (extremely severe) (total score range: 18 to 126). Higher scores represent greater symptom severity.

The investigator or other qualified site personnel will administer and score the BPRS pre-evening dose on Days 1 and 14, on Days 2 (Cohorts 1 and 2 only) and 15, and at the final study visit (Day 49 or early termination). A copy of the BPRS is provided in [Appendix A](#).

#### **8.5.6. Columbia-Suicide Severity Rating Scale**

The C-SSRS is a validated instrument to prospectively assess suicidal ideation and behavior (<http://www.cssrs.columbia.edu>). There are versions of the questionnaire designed for use at screening (Screening/Baseline version) and at visits throughout the study (Since Last Visit version). All versions of the C-SSRS include a series of screening questions related to suicidal ideation and suicidal behavior. Subject responses of 'yes' to one or more screening questions will prompt additional questions that evaluate frequency and intensity of suicidal ideation and/or behavior. Subjects with any suicidal behavior or suicidal ideation of type 4 (active suicidal ideation with some intent to act, without specific plan) or type 5 (active suicidal ideation with specific plan and intent) in the past 6 months before screening based on the C-SSRS should be excluded (see [exclusion criterion #20](#)).

The C-SSRS will be administered and scored by the investigator or other qualified site personnel who completed C-SSRS certification. The C-SSRS will be administered at screening, during PD baseline (only for subjects who reenroll and who do not undergo screening), Day 1, Day 15, and at the final study visit (Day 49 or early termination). The “Screening/Baseline” version of the scale will be used to evaluate subject eligibility at screening (or at PD baseline for subjects in Cohorts 3 and 4 who do not undergo screening) and the “Since Last Visit” version will be used at all other times.

A copy of both versions of the C-SSRS are provided in [Appendix B](#).

## **8.6. Subject Study Diary**

The site will provide each subject with a subject study diary on Day 1 prior to dosing. The date and time of study drug administration, the number of capsules taken, and confirmation that [REDACTED] was taken (Cohorts 1 and 2), that the study drug was taken with the evening meal (Cohort 3), or that the study drug was taken with breakfast and the evening meal (Cohort 4), will be documented each day. The diary will be reviewed for completeness at the Day 7 visit. The subject will return the diary at the Day 14 visit.

## **8.7. Specific Study Period Information for Cohorts 1 and 2**

### **8.7.1. Screening Period (Study Days -28 to -8)**

After providing subject informed consent, subjects will undergo screening procedures within 21 days of Day -7.

The following study evaluations and tasks will be performed during screening:

- Assess inclusion/exclusion criteria.
- Collect medical history.
- Perform a physical examination including height and weight.
- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a serum pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect blood sample for FSH testing only if subject is postmenopausal.
- Collect blood sample for serology testing (HBsAg, HCV-Ab, and HIV-Ab).
- Collect blood sample for morning serum 17-OHP measurement between 0700 and 1000 hours (prior to first morning dose of hydrocortisone). Subject must have serum 17-OHP level  $\geq 1,000$  ng/dL to be enrolled in the study.
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect urine for drug screen (central laboratory) and perform alcohol breath test.

- Collect blood sample for other PD biomarkers (androstenedione, testosterone, cortisol, and ACTH).
- Administer the C-SSRS (Screening/Baseline version).
- AE monitoring.
- Record prior medications.

Eligible subjects will be instructed to return to the study center on Day -7.

### **8.7.2. Day -7 to Day -6: 24-Hour Baseline Pharmacodynamics**

Subjects who continue to meet eligibility requirements will return to the study center for a 24-hour in-patient stay, during which blood samples will be collected for PD analysis. Subjects will not take their usual morning dose of steroidal treatment until after the 1000 hours PD sample is collected on Day -6.

The following study evaluations and tasks will be performed on Day -7 to Day -6:

- Update inclusion/exclusion criteria and medical history.
- Collect vital signs.
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect urine for drug screen and perform alcohol breath test. Urine testing kits will be provided by the central laboratory to confirm negative drug screen prior to PD collection. A separate urine sample will also be sent to the central laboratory for analysis.
- Collect blood samples for PD biomarkers (17-OHP, androstenedione, testosterone, cortisol, and ACTH) at: approximately 2145, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, and 2200 hours.
- AE monitoring.
- Record prior medications.

Eligible subjects will be instructed to return to the study center on Day 1.

### **8.7.3. Treatment Period for Each Dose Cohort**

The study will consist of a 14-day treatment period and will include 2 overnight in-patient stays (on Day 1 to Day 2 and Day 14 to Day 15) and a study center visit on Day 7.

#### **8.7.3.1. Day 1 to Day 2**

Subjects will be admitted to the study center on Day 1 and will be discharged in the evening of Day 2 after the 24-hour postdose procedures have been performed. Standard meals and snacks will be provided during the in-patient stay. The procedures to be conducted on these days are described in the following sections.



## Day 1

Subjects will report to the study center on Day 1. The following study evaluations and tasks will be performed prior to dosing on Day 1:

- Update inclusion/exclusion criteria and medical history.
- Perform a physical examination including weight.
- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- [REDACTED]
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect urine for drug screen and perform alcohol breath test. Urine testing kits will be provided by the central laboratory to confirm negative drug screen prior to dosing. A separate urine sample will also be sent to the central laboratory for analysis.
- Collect blood sample for PD biomarkers at 15 minutes predose.
- Collect blood sample for PK at 15 minutes predose.
- Administer the BPRS.
- Administer the C-SSRS (Since Last Visit version).
- AE monitoring.
- Record prior and concomitant medications.
- Provide subject with a subject study diary and instruct him/her to document in the diary the date and time of study drug administration, the number of capsules taken, and confirmation that [REDACTED] was taken each day.

At approximately 2200 hours, each subject will receive study drug as described in [Section 9.3](#). Subjects will go to bed after study drug dosing.

The following study evaluations and tasks will be performed after dosing on Day 1 while the subject remains in bed:

- Collect blood samples for PD biomarkers at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
- Collect blood samples for PK at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
- AE monitoring.
- Record concomitant medications.

## Day 2

Subjects will be awakened at approximately 0600 hours. Subjects will delay their usual morning dose of steroidal treatment until after the 12-hour postdose PK/PD samples are collected (ie, at approximately 1000 hours).

The following study evaluations and tasks will be performed on Day 2:

- Perform a physical examination.
- Collect vital signs between 8-10 and 22-24 hours postdose (ie, morning and evening).
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Collect blood samples for PD biomarkers at 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
- Collect blood samples for PK at 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
- Administer the BPRS.
- AE monitoring.
- Record concomitant medications.

The following procedures will be conducted *before* subjects may be discharged from the study center:

- At approximately 2200 hours, each subject will receive study drug as described in [Section 9.3](#).
- Instruct male subjects and female subjects of childbearing potential who do not practice total abstinence to continue using contraception.
- Instruct subjects to notify the investigator or study staff by telephone if they experience any AEs and before taking any concomitant medications.
- Instruct subjects to continue taking study drug nightly at approximately 2200 hours through Day 13 as described in Section 9.3, and to document in the diary the date and time of study drug administration, the number of capsules taken, and confirmation that [REDACTED] was taken each day.
- Instruct subjects to bring the subject study diary as well as the remaining study drug back for the Day 7 visit.
- Instruct subjects to delay their usual morning dose of concurrent steroidal treatments until approximately 1000 hours on Days 3 to 14.

Sites should call subjects between the Day 3 and Day 7 visits to remind them to complete the subject study diary, check on compliance, and remind them to bring subject study diary and remaining study drug to the Day 7 visit.

### **8.7.3.2. Day 7**

The following procedures will be performed at the study center on Day 7:

- Perform a physical examination.
- Collect vital signs.
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect blood samples for PD biomarkers at 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose.
- Collect blood samples for PK at 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose.
- Check subject study diary.
- Study drug reconciliation.
- AE monitoring.
- Record concomitant medications.

The following additional procedures will be conducted on Day 7:

- Instruct subjects to perform study drug dosing (as described in [Section 9.3](#)) and subject study diary entry at home.
- Instruct subjects to return to the study center on Day 14 before dosing and to bring with them their study drug bottle including any unused study drug, and their subject study diary.

### **8.7.3.3. Day 14 to Day 15**

Subjects will return to the study center on Day 14 and will be discharged in the evening of Day 15 after the 24-hour postdose procedures have been performed. Standard meals and snacks will be provided. The procedures to be conducted on these days are described in the following sections.

#### **Day 14**

Subjects will return to the study center on Day 14. The following study evaluations and tasks will be performed prior to dosing on Day 14:

- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect urine for drug screen and perform alcohol breath test.
- Collect blood sample for PD biomarkers at 15 minutes predose.
- Collect blood sample for PK at 15 minutes predose.

- Administer the BPRS.
- Collect the study drug bottle including any unused study drug.
- Study drug reconciliation.
- AE monitoring.
- Record concomitant medications.

At approximately 2200 hours, each subject will receive study drug as described in [Section 9.3](#). After study drug dosing, subjects will record in the subject study diary the date and time of study drug administration, the number of capsules taken, and confirmation that [REDACTED] was taken. The subject study diary will then be collected. Subjects will then go to bed.

The following procedures will be conducted after dosing on Day 14 while the subject remains in bed:

- Collect blood samples for PD biomarkers at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
- Collect blood samples for PK at 1, 2, 3, 4, and 6 hours postdose ( $\pm 5$  minute window).
- AE monitoring.
- Record concomitant medications.

### **Day 15**

Subjects will be awakened at approximately 0600 hours. Subjects will delay their usual morning dose of steroidal treatment until after the 16-hour postdose PK/PD samples are collected (ie, at approximately 1400 hours).

The following procedures will be performed on Day 15:

- Perform a physical examination including weight.
- Collect vital signs between 8-10 and 22-24 hours postdose (ie, morning and evening).
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect blood samples for PD biomarkers at 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
- Collect blood samples for PK at 8, 10, 12, 14, 16, 20, and 24 hours postdose ( $\pm 15$  minute window).
- Administer the BPRS.
- Administer the C-SSRS (Since Last Visit version).
- AE monitoring.

- Record concomitant medications.

The following procedures will be conducted before subjects may be discharged from the study center:

- Instruct male subjects and female subjects of childbearing potential who do not practice total abstinence to continue using contraception.
- Instruct subjects to notify the investigator or study staff by telephone if they experience any AEs and before taking any concomitant medications.
- Confirm if the subject prefers to have the Days 21, 28, and 35 visits conducted at home instead of at the study center.
  - If the subject elects to have a home visit, instruct him/her that the qualified home healthcare provider will contact him/her to schedule the visit.
  - If the subject elects to come into the study center, instruct him/her to return on Days 21, 28, and 35.

#### **8.7.4. Follow-Up Period**

Follow-up visits will be conducted on Days 21, 28, and 35 with a final study visit on Day 49 (or early termination). Based on their preference, the subject will either come into the study center, or the qualified home healthcare provider will come to the subject's home on Days 21, 28, and 35. The final study visit will be conducted at the study center.

##### **8.7.4.1. Follow-Up Visits: Days 21, 28, and 35**

The following procedures will be performed on Days 21, 28, and 35 (-8 hours/+3 days for Days 21, 28, and 35):

- Collect blood samples for PD biomarkers at approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose.
- Collect blood samples for PK at approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose.
- AE monitoring.
- Record concomitant medications.

At each visit, subjects will be reminded to notify the investigator or study staff by telephone if they experience any AEs and before taking any concomitant medications.

At the Day 35 visit, subjects will be reminded to report to the study center on Day 49 (+7 days) for the final study visit (or at early termination).

##### **8.7.4.2. Final Study Visit: (Day 49 or Early Termination)**

Subjects will return to the study center for the final study visit.

The following procedures will be conducted at the final study visit:

- Perform a physical examination including weight.
- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect blood sample for PD biomarkers.
- Collect blood sample for PK.
- Administer the BPRS.
- Administer the C-SSRS (Since Last Visit version).
- AE monitoring.
- Record concomitant medications.

## **8.8. Specific Study Period Information for Cohorts 3 and 4**

### **8.8.1. Screening Period (Study Days -28 to -8)**

Subjects who reenroll and have had a stable medication regimen for CAH since their last visit in this study (in Cohorts 1 or 2) do not have to undergo screening; those who reenroll and have had a change to their medication regimen for CAH must undergo a second screening visit. After providing subject informed consent, subjects will undergo screening procedures within 21 days of Day -7.

The following study evaluations and tasks will be performed during screening:

- Assess inclusion/exclusion criteria.
- Collect medical history.
- Perform a physical examination including height and weight.
- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a serum pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect blood sample for FSH testing only if subject is postmenopausal.
- Collect blood sample for serology testing (HBsAg, HCV-Ab, and HIV-Ab).
- Collect blood sample for morning serum 17-OHP measurement between 0700 and 1000 hours (prior to first morning dose of hydrocortisone). Subject must have serum 17-OHP level  $\geq 1,000$  ng/dL to be enrolled in the study.
- Collect blood sample for hematology and clinical chemistry.

- Collect urine sample for urinalysis.
- Collect urine for drug screen (central laboratory) and perform alcohol breath test.
- Collect blood sample for other PD biomarkers (androstenedione, testosterone, cortisol, and ACTH).
- Administer the C-SSRS (Screening/Baseline version).
- AE monitoring.
- Record prior medications.

Eligible subjects will be instructed to return to the study center on Day -7.

### **8.8.2. Day -7 to Day -6: 24-Hour Baseline Pharmacodynamics**

Subjects who reenroll and do not undergo screening must provide subject informed consent.

Subjects who continue to meet eligibility requirements will return to the study center for a 24-hour in-patient stay, during which blood samples will be collected for PD analysis. Subjects will not take their usual morning dose of steroidal treatment until after the 1000 hours PD sample is collected on Day -6.

The following study evaluations and tasks will be performed on Day -7 to Day -6:

- Update inclusion/exclusion criteria and medical history (only for subjects who undergo screening).
- Collect vital signs.
- Perform a urine (for subjects who undergo screening) or serum (for subjects who did not undergo screening) pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect urine for drug screen and perform alcohol breath test. Urine testing kits will be provided by the central laboratory to confirm negative drug screen prior to PD collection. A separate urine sample will also be sent to the central laboratory for analysis.
- Collect blood samples for PD biomarkers (17-OHP, androstenedione, testosterone, cortisol, and ACTH) at: approximately 1845, 2000, 2100, 2200, 2300, 2400, 0100, 0200, 0400, 0600, 0800, 1000, 1200, 1400, 1800, 1900, and 2200 hours.
- Administer the C-SSRS (Screening/Baseline version) only for subjects who reenroll and who do not undergo screening.
- AE monitoring.
- Record prior medications.

Eligible subjects will be instructed to return to the study center on Day 1.


### **8.8.3. Treatment Period**

The study will consist of a 14-day treatment period and will include an overnight in-patient stay (on Day 14 to Day 15) and study center visits on Days 1 and 7.

### 8.8.3.1. Day 1

Subjects will report to the study center on Day 1. The following study evaluations and tasks will be performed on Day 1:

- Update inclusion/exclusion criteria and medical history (only for subjects who undergo screening).
- Perform a physical examination including weight.
- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.

- 
- Collect blood sample for hematology and clinical chemistry.
  - Collect urine sample for urinalysis.
  - Collect urine for drug screen and perform alcohol breath test. Urine testing kits will be provided by the central laboratory to confirm negative drug screen prior to dosing. A separate urine sample will also be sent to the central laboratory for analysis.
  - Administer the BPRS.
  - Administer the C-SSRS (Since Last Visit version).
  - AE monitoring.
  - Record prior and concomitant medications.
  - Instruct male subjects and female subjects of childbearing potential who do not practice total abstinence to continue using contraception.
  - Instruct subjects to notify the investigator or study staff by telephone if they experience any AEs and before taking any concomitant medications.
  - Instruct subjects to take study drug nightly at approximately 1900 hours through Day 13 (Cohorts 3 and 4) and at approximately 0700 hours through Day 14 (Cohort 4 only) as described in [Section 9.3](#), and to document in the diary the date and time of study drug administration, the number of capsules taken, and confirmation that study drug was taken with breakfast (Cohort 4 only) and the evening meal each day.
  - Instruct subjects to bring the subject study diary as well as the remaining study drug back for the Day 7 visit.
  - Instruct subjects to delay their usual morning dose of concurrent steroidal treatments until approximately 1000 hours on Days 2 to 14.



Sites should call subjects between the Day 3 and Day 7 visits to remind them to complete the subject study diary, check on compliance, and remind them to bring subject study diary and remaining study drug to the Day 7 visit.

#### **8.8.3.2. Day 7**

The following procedures will be performed at the study center on Day 7:

- Perform a physical examination.
- Collect vital signs.
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect blood samples for PD biomarkers at 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose for Cohort 3; 12 hours post morning dose but prior to the evening dose for Cohort 4 (-4 hour window).
- Collect blood samples for PK at 24 hours (-8 hour window) after the Day 6 dose and prior to the Day 7 dose for Cohort 3; 12 hours post morning dose but prior to the evening dose for Cohort 4 (-4 hour window).
- Check subject study diary.
- Study drug reconciliation.
- AE monitoring.
- Record concomitant medications.

The following additional procedures will be conducted on Day 7:

- Instruct subjects to perform study drug dosing (as described in [Section 9.3](#)) and subject study diary entry at home.
- Instruct subjects to return to the study center on Day 14 before dosing and to bring with them their study drug bottle including any unused study drug, and their subject study diary.

#### **8.8.3.3. Day 14 to Day 15**

Subjects will return to the study center on Day 14 and will be discharged in the evening of Day 15 after the 24-hour postdose procedures have been performed. Standard meals and snacks will be provided. The procedures to be conducted on these days are described in the following sections.

##### **Day 14**

Subjects will return to the study center on Day 14 (subjects in Cohort 4 will take their morning study drug dose at home). The following study evaluations and tasks will be performed prior to evening dosing on Day 14:

- Collect vital signs.

- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect urine for drug screen and perform alcohol breath test.
- Collect blood sample for PD biomarkers at 15 minutes predose.
- Collect blood sample for PK at 15 minutes predose.
- Administer the BPRS.
- Collect the study drug bottle including any unused study drug.
- Study drug reconciliation.
- AE monitoring.
- Record concomitant medications.

At approximately 1900 hours, each subject will receive study drug as described in [Section 9.3](#) with a moderate fat/moderate calorie meal. Subjects should complete their evening meal within 30 minutes of taking study drug. After study drug dosing, subjects will record in the subject study diary the date and time of study drug administration, the number of capsules taken, and confirmation that study drug was taken with the evening meal. The subject study diary will then be collected.

The following procedures will be conducted after dosing on Day 14:

- Collect blood samples for PD biomarkers at 1, 2, 3, 4, and 5 hours postdose ( $\pm 5$  minute window).
- Collect blood samples for PK at 1, 2, 3, 4, and 5 hours postdose ( $\pm 5$  minute window).
- AE monitoring.
- Record concomitant medications.

### **Day 15**

Subjects will delay their usual morning dose of steroidal treatment until after the 19-hour postdose PK/PD samples are collected (ie, at approximately 1400 hours).

The following procedures will be performed on Day 15:

- Perform a physical examination including weight.
- Collect vital signs between 8-10 and 22-24 hours post-evening dose (ie, morning and evening).
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.

- Collect blood samples for PD biomarkers at 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose ( $\pm 15$  minute window) (for Cohort 4, all times are relative to evening dosing).
- Collect blood samples for PK at 6, 7, 9, 11, 13, 15, 17, 19, 23, 24, and 27 hours postdose ( $\pm 15$  minute window) (for Cohort 4, all times are relative to evening dosing).
- Administer the BPRS.
- Administer the C-SSRS (Since Last Visit version).
- AE monitoring.
- Record concomitant medications.

The following procedures will be conducted before subjects may be discharged from the study center:

- Instruct male subjects and female subjects of childbearing potential who do not practice total abstinence to continue using contraception.
- Instruct subjects to notify the investigator or study staff by telephone if they experience any AEs and before taking any concomitant medications.
- Confirm if the subject prefers to have the Days 21, 28, and 35 visits conducted at home instead of at the study center.
  - If the subject elects to have a home visit, instruct him/her that the qualified home healthcare provider will contact him/her to schedule the visit.
  - If the subject elects to come into the study center, instruct him/her to return on Days 21, 28, and 35.

#### **8.8.4. Follow-Up Period**

Follow-up visits will be conducted on Days 21, 28, and 35 with a final study visit on Day 49 (or early termination). Based on their preference, the subject will either come into the study center, or the qualified home healthcare provider will come to the subject's home on Days 21, 28, and 35. The final study visit will be conducted at the study center.

##### **8.8.4.1. Follow-Up Visits: Days 21, 28, and 35**

The following procedures will be performed on Days 21, 28, and 35 (-8 hours/+3 days for Days 21, 28, and 35):

- Collect blood samples for PD biomarkers at approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose (for Cohort 4, all times are relative to evening dosing).
- Collect blood samples for PK at approximately 168 hours (-8 hours/+3 days), 336 hours (-8 hours/+3 days), and 504 hours (-8 hours/+3 days) postdose (for Cohort 4, all times are relative to evening dosing).
- AE monitoring.

- Record concomitant medications.

At each visit, subjects will be reminded to notify the investigator or study staff by telephone if they experience any AEs and before taking any concomitant medications.

At the Day 35 visit, subjects will be reminded to report to the study center on Day 49 (+7 days) for the final study visit (or at early termination).

#### **8.8.4.2. Final Study Visit: (Day 49 [+7 Days] or Early Termination)**

Subjects will return to the study center for the final study visit.

The following procedures will be conducted at the final study visit:

- Perform a physical examination including weight.
- Collect vital signs.
- Perform 12-lead ECG in triplicate (1-3 minutes apart).
- Perform a urine pregnancy test ( $\beta$ -hCG) for female subjects of childbearing potential.
- Collect blood sample for hematology and clinical chemistry.
- Collect urine sample for urinalysis.
- Collect blood sample for PD biomarkers.
- Collect blood sample for PK.
- Administer the BPRS.
- Administer the C-SSRS (Since Last Visit version).
- AE monitoring.
- Record concomitant medications.

### **8.9. Study Duration**

The total duration of the study (including screening, a 24-hour PD baseline period, treatment periods, and follow-up) will be approximately 11 weeks, including up to approximately 3 weeks for screening, a 24-hour PD baseline period (approximately 7 days prior to the first day of dosing), 14 days of dosing, and a follow-up period of approximately 5 weeks. The total duration of the study will be an additional 8 to 11 weeks for subjects who reenroll.

### **8.10. Prohibitions and Restrictions**

#### **8.10.1. Prior and Concomitant Medications**

All prescription and over-the-counter medications, dietary supplements (including vitamins), and herbal supplements taken by the subject during the 30 days before screening will be recorded on the Prior and Concomitant Medications page of the eCRF.

Subjects must be on a stable regimen of steroidal treatment for CAH for a minimum of 30 days before PD baseline (Day -7) and the regimen should remain stable throughout the study. [REDACTED]

[REDACTED] In the case of intercurrent stressful events, appropriate corticosteroid augmentation should be provided. [REDACTED]

[REDACTED] Female subjects of childbearing potential may use hormonal contraception during the study if taken for at least 3 months prior to screening. Subjects who are on stable medication regimens to treat stable medical conditions (other than CAH) are allowed to participate in the study. Use of cannabis products for a substantiated medical use (ie, not recreational use) is permitted during the study.

The following medications are prohibited from 30 days before screening until the final study visit (or early termination):

- Dexamethasone
- Orally administered glucocorticoids for indications other than CAH

[REDACTED]

- As-needed doses of anxiolytics

[REDACTED]

Before excluding any subject based on prior and concomitant medication use, please contact the NBI Medical Monitor. Any concomitant medication taken during the study will be recorded on the Prior and Concomitant Medications page of the eCRF with indication, total daily dose, route, and dates of drug administration.

Any additions, deletions, or changes in the dose of medications during the study should be recorded on the appropriate eCRF page.

#### **8.10.2. Dietary and Other Restrictions**

Subjects may be confined to the study center for approximately 24 hours two (Cohorts 3 and 4) or three (Cohorts 1 and 2) times during the study; on Days -7 to -6 (for PD baseline sample collection), Days 1 to 2 (Cohorts 1 and 2 only), and Days 14 to 15. In these instances, subjects will be discharged from the study center after completion of the required procedures. On Days 1 and 14 for Cohorts 1 and 2, subjects will go to bed after study drug dosing at approximately 2200 hours and will be awakened the next morning (Days 2 and 15, respectively) at approximately 0600 hours. Subjects in Cohorts 3 and 4 will receive the study drug with a moderate fat/moderate calorie meal at approximately 1900 hours on Day 14. This meal must be consumed within 30 minutes of taking study drug.

[REDACTED] Foods containing poppy seeds are prohibited from 7 days before screening until the final study visit. Subjects must refrain from excessive consumption of alcohol (ie, no more than 2 drinks per day) during the study.

Strenuous activity beyond what is customary for the subject is prohibited during the study.

Subjects must not donate blood or blood products from 30 days before Day -7 until 30 days after the final study visit (or early termination). Male subjects must agree to refrain from donating sperm for 90 days after the last dose of study drug.

Participation in another investigational drug study is prohibited for at least 30 days after the last dose of study drug in the current study.

## **8.11. Withdrawal Criteria**

### **8.11.1. Reasons for Withdrawal**

Subjects are free to discontinue their participation in the study at any time. The investigator must withdraw any subject from the study if that subject requests to be withdrawn.

The investigator must withdraw the subject from the study if the subject experiences any of the following:

- If the type, frequency, or severity of any AE becomes unacceptable/intolerable.
- QTcF value >500 msec (one or more value; cardiologist verified).
- Is lost to follow up.
- Subject is confirmed to be pregnant.

The investigator or NBI may withdraw the subject from the study for other reasons as described below. These should be discussed on a case-by-case basis with the NBI medical monitor (or designee) prior to withdrawing the subject from the study.

- Develops an ECG abnormality.
- Liver function test values for AST or ALT exceed 2.5 times ULN, GGT exceeds 3 times ULN, or total bilirubin exceeds 2 times ULN.
- Creatinine value exceeds 1.5 times ULN.

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

- Positive urine drug or alcohol screen.
- Requires a medication that is prohibited by the protocol (refer to [Section 8.10.1](#)).

All subjects prematurely discontinuing the study, regardless of cause, should have all early termination assessments performed (see [Section 8.7.4.2](#)).

### **8.11.2. Handling of Withdrawals**

If a subject prematurely withdraws from the study, either at his/her request or at the investigator's discretion, the investigator will record the reason for withdrawal on the relevant eCRF. All subjects who withdraw from the study prematurely will be asked to have all early termination assessments performed within 4 weeks.

It is crucial to obtain follow-up data for any subject withdrawn because of an AE, abnormal laboratory test, vital sign measurement, physical examination, or ECG finding. In any case, every effort must be made to undertake safety follow-up procedures.

### **8.11.3. Sponsor's Termination of Study**

NBI reserves the right to discontinue the study at any time for clinical or administrative reasons. Such a termination must be implemented by the investigator if instructed to do so by NBI in a time frame that is compatible with the subjects' well-being.

## **9. STUDY DRUG**

NBI-74788 will be supplied as capsules containing 50 mg of NBI-74788 [REDACTED] for oral administration.

### **9.1. Study Drug Supplies**

NBI or its designee will provide the study site with sufficient capsule supplies for the completion of the study. Study drug will be supplied in [REDACTED]. The study site will provide subjects with bottles of vanilla-flavored [REDACTED] (~237 mL) (Cohorts 1 and 2 only).

### **9.2. Study Drug Packaging and Labeling**

All packaging and labeling operations will be conducted according to Good Manufacturing Practice (GMP) and GCP. The study drug will be sent to designated staff at the study site who must complete and return the Drug Supply Confirmation to NBI or its designee verifying the receipt of the drug.

Study drug will be labeled with the following information, including, but not limited to: protocol number, dosage form, route of administration, Sponsor name, and the statement "Caution – New Drug: Limited by Federal law to investigational use."

### **9.3. Study Drug Administration**

#### **Cohorts 1 and 2**

Subjects will take study drug capsule(s) by mouth at approximately 2200 hours for 14 consecutive days beginning on Day 1. Each dose of study drug is to be administered with a bottle of vanilla-flavored [REDACTED] (~237 mL); subjects should finish consuming the entire bottle of [REDACTED] within 30 minutes of taking study drug. The designated NBI-74788 dose (50 or 100 mg) will be administered as 1 or 2 NBI-74788 50 mg capsules.

### **Cohort 3**

Subjects will take study drug capsules by mouth at approximately 1900 hours for 14 consecutive days beginning on Day 1. Each dose of study drug is to be administered with their evening meal; subjects should complete their evening meal within 30 minutes of taking study drug. The designated NBI-74788 dose (100 mg) will be administered as 2 NBI-74788 50 mg capsules.

### **Cohort 4**

Subjects will take study drug capsules by mouth for 14 consecutive days beginning at approximately 1900 hours on Day 1; subsequently, study drug will be taken at approximately 0700 hours (with breakfast) and approximately 1900 hours (with evening meal). Subjects should complete their respective meals within 30 minutes of taking study drug. The designated NBI-74788 dose (100 mg) will be administered as 2 NBI-74788 50 mg capsules (200 mg total daily dose).

## **9.4. Study Drug Storage and Return**

NBI-74788 [REDACTED]  
[REDACTED] and in a locked area accessible only to the pharmacist or designee until dispensing.

Study drug should be stored and inventoried according to applicable state and federal regulations and study procedures.

Written documentation to account for study drug and study drug materials is mandatory; all unused study drug and study drug materials must be kept in a secure location for final accountability and reconciliation. Returned study drug and study drug material must be accounted for on a study drug return form provided by NBI or the designee. The investigator must provide a written explanation for any destroyed or missing study drug or study drug materials.

Returns will be shipped to NBI or its designee at the completion of the study according to instructions provided by NBI or its designee. Study drug return forms must be completed for the shipment of returns and sent with the study drug and study drug materials. One copy of the study drug return form will be retained in the investigator's study file. All returned study drug and study drug materials should be stored, inventoried, reconciled, and returned according to applicable state and federal regulations and study procedures.

## **9.5. Blinding**

This is an open-label study.

## **9.6. Study Compliance and Accountability**

All doses of the study drug ingested in the study center will be taken in the presence of study site personnel who will check the subject's hands and mouth to confirm that the dose has been swallowed.

The quantity of study drug dispensed, used, and returned will be recorded on a dispensing log or otherwise documented. The quantity of study drug lost or destroyed, must also be accounted for



and documented. The designated pharmacist or qualified personnel will be responsible for maintaining accurate records of the quantity and dates of all study drug supplies received, dispensed, and returned.

The exact time of medication dosing will be recorded on the eCRF.

## **10. ADVERSE EVENTS**

All AEs, whether observed by the investigator, reported by the subject, noted from laboratory findings, or by other means, will be recorded from the time the subject has signed the ICF until the subject's final study visit.

### **10.1. Definition**

An AE is any untoward medical occurrence associated with the use of a drug in humans, whether or not considered drug related. During the study, clinically significant adverse changes in clinical status, ECGs, laboratory values (not associated with an AE or concurrent medical condition), or physical examinations are considered AEs. Any subject complaint associated with such an abnormal finding will also be reported as an AE.

AEs include, but are not limited to: (1) a worsening or change in nature, severity, or frequency of conditions present at the start of the study; (2) subject deterioration due to primary illness; (3) intercurrent illness; and (4) drug interaction.

All suicidal behaviors and clinically significant suicidal ideations will be documented as an AE.

Subjects should be questioned in a general way, without asking about the occurrence of any specific symptom. The investigator should attempt to establish a diagnosis of the event based on signs, symptoms, and/or other clinical information. In such cases, the diagnosis should be documented as the AE and not the individual signs/symptoms. Following questioning and evaluation, all AEs, whether believed by the investigator to be related or unrelated to the study drug, must be documented in the subject's medical records, in accordance with the investigator's normal clinical practice and on the AE eCRF. Each AE is to be evaluated for duration, intensity, frequency, seriousness, outcome, other actions taken, and relationship to the study drug.

The following are not considered AEs:

- Continuous persistent disease/symptom present before drug administration, unless it unexpectedly progresses, or increases in severity following drug administration.
- Pregnancy.

### **10.2. Intensity of Adverse Events**

AEs must be graded for intensity. An intensity category of mild, moderate, or severe, as defined in [Table 4](#), must be entered on the AE eCRF. It should be noted that the term "severe" used to grade intensity is not synonymous with the term "serious."

**Table 4: Intensity of Adverse Events**

Grade	Intensity
Mild	An AE that is usually transient and may require only minimal treatment or therapeutic intervention. The event does not generally interfere with usual activities of daily living.
Moderate	An AE that is usually alleviated with additional specific therapeutic intervention. The event interferes with usual activities of daily living, causing discomfort but poses no significant or permanent risk of harm to the research participant.
Severe	An AE that interrupts usual activities of daily living, or significantly affects clinical status, or may require intensive therapeutic intervention.

### 10.3. Relationship to Study Drug

The investigator will document his/her opinion of the relationship of the AE to treatment with study drug using the criteria outlined in Table 5. An AE is deemed associated with the use of the study drug “if there is a reasonable possibility that the drug caused the AE” (otherwise referred to as a suspected adverse reaction). Reasonable possibility means there is evidence to suggest a causal relationship between the drug and the AE (Title 21 CFR 312.32 [a]).

**Table 5: Relationship of Adverse Events to Study Drug**

Relationship	Description
Definite	A reaction that follows a reasonable temporal sequence from administration of the drug or in which the drug level has been established in body fluids or tissue; that follows a known or expected response pattern to the suspected drug; and that is confirmed by improvement on stopping or reducing the dosage of the drug, and reappearance of the reaction on repeated exposure.
Possible	An AE in which there is reasonable possibility that the drug caused the event. Reasonable possibility means there is evidence to suggest a causal relationship between the drug and the AE.
Unlikely	A reaction that follows a reasonable temporal sequence from administration of the drug; that follows a known or suspected response pattern to the suspected drug; but that could reasonably be explained by known characteristics of the subject’s clinical state.
Not Related	Any event that does not meet the above criteria.

### 10.4. Recording Adverse Events

For enrolled subjects, each AE will be listed as a separate entry on an AE eCRF. Screen failure subjects will have AE information noted in the source documentation. The investigator (or designee) will provide information on dates and times of onset and resolution, intensity, seriousness, frequency, action(s) taken, changes in study drug usage, relationship to study drug, and outcome.

The following categories of medical events that could occur during participation in a clinical study must be reported within 24 hours to NBI or its designee:

- SAE, including death ([Section 10.6](#)).
- Pregnancy ([Section 10.7](#)).

- Events of suicidal behavior or suicidal ideation type 4 (active suicidal ideation with some intent to act, without specific plan) or type 5 (active suicidal ideation with specific plan and intent) based on the C-SSRS.

## **10.5. Post-Study Follow-Up of Adverse Events**

All AEs, including clinically significant changes in ECGs, physical examination findings, or isolated clinically significant laboratory findings must be followed until the event resolves, the condition stabilizes, the event is otherwise explained, or the subject is lost to follow-up. If resolved, a resolution date should be documented on the eCRF.

AEs ongoing at the final study visit (or upon early termination) will be followed for as long as necessary to adequately evaluate the subject's safety or until the event stabilizes or resolves or until the subject is lost to follow up. The investigator is responsible for ensuring that follow-up includes any supplemental investigations as may be indicated to elucidate the nature and/or causality of the AE. This may include additional laboratory tests or investigations, histopathological examinations, or consultation with other health care professionals, as is practical.

## **10.6. Serious Adverse Events**

All SAEs will be recorded from the time the subject has signed the ICF until the final study visit or 30 days after the last dose of study drug, whichever is longer in duration.

### **10.6.1. Definition of a Serious Adverse Event**

An SAE is any AE that results in any of the following outcomes:

- Death.
- A life-threatening AE. Life threatening means that the subject was, in the view of the investigator or Sponsor, at immediate risk of death from the reaction as it occurred. It does not mean that hypothetically the event might have caused death if it occurred in a more serious form.
- Inpatient hospitalization or prolongation of existing hospitalization. Hospitalization for elective treatment or a pre-existing condition that did not worsen during the clinical investigation is not considered an AE. Hospitalization or nursing home admission for the purpose of caregiver respite is not considered an AE. Complications that occur during hospitalization are AEs, and if a complication prolongs hospitalization, the event is considered serious. Treatment in a hospital emergency room is not a hospitalization.
- A persistent or significant incapacity or substantial disruption of a person's ability to conduct normal life functions.
- A congenital anomaly/birth defect.
- Important medical events that may not result in death, be life threatening, or require hospitalization. These events may be considered serious when, based on appropriate medical judgment, they may jeopardize the health of the subject and may require medical or surgical intervention to prevent one of the outcomes listed. Any other event thought by the investigator to be serious should also be reported, following the reporting requirements

detailed in this section. Examples of such medical events include allergic bronchospasm requiring intensive treatment in an emergency room or at home, blood dyscrasias, convulsions that do not result in inpatient hospitalization, or the development of drug dependency or drug abuse.

### 10.6.2. Managing Serious Adverse Events

Subjects experiencing an SAE or an emergency situation will be examined by a physician as soon as possible. The physician in attendance will do whatever is medically needed for the safety and well-being of the subject. The subject will remain under observation as long as medically indicated. Appropriate laboratory studies will be conducted until all parameters return to normal or are otherwise explained or stable. The subject will be followed until the SAE resolves or until the subject is medically stabilized. The investigator (or designee) will notify the NBI Medical Monitor (and the IRB, if necessary) immediately (within 24 hours) of the SAE and the outcome of the SAE.

If an investigator becomes aware of an SAE within the time of informed consent until the final study visit or 30 days after the last dose of study drug (whichever is longer in duration), then the event must be documented and reported as described in Section 10.6.3.

### 10.6.3. Reporting Serious Adverse Events and Other Immediately Reportable Events

Serious AEs and other immediately reportable events (defined in [Section 10.4](#)) must be reported within 24 hours of first knowledge of the event by study personnel to the NBI Medical Monitor or NBI Clinical Drug Safety (CDS) Department. Reports of SAEs or pregnancies should be followed by a fax or email of the SAE or Pregnancy Form. It is important that the investigator provide his or her assessment of relationship to study drug at the time of the initial SAE report.

For SAEs or Other Immediately Reportable Events, contact CDS:

CDS telephone: [REDACTED]  
CDS facsimile: [REDACTED]  
CDS e-mail: [REDACTED]  
NBI Medical Monitor: Telephone: [REDACTED]  
Cell phone: [REDACTED]

### 10.6.4. Expedited Safety Reports

NBI or its representatives will submit an Expedited Safety Report for any suspected adverse reaction (as defined in [Section 10.3](#)) that is considered both serious and unexpected within 15 calendar days and for any unexpected fatal or life threatening experience within 7 calendar days via telephone or facsimile; or according to country specific regulations.

NBI or its representatives will send copies of each safety report submitted to regulatory authorities to the investigators. The safety report must be submitted to the appropriate IRB as soon as possible. Documentation of the submission to the IRB and receipt by the IRB (if applicable) must be retained for each safety report.

## 10.7. Pregnancy

Women of childbearing potential will be enrolled in this study. In the event of a pregnancy, the following instructions should be followed.

Pregnancy is neither an AE nor an SAE unless the criteria for an SAE are met. However, all pregnancies in female subjects who received NBI-74788 will be followed to assess for congenital anomaly. If at any time between the time the subject signs the ICF and the last study visit a subject believes she is pregnant, the subject will be instructed to return to the study site within 24 hours and undergo a serum pregnancy test to confirm pregnancy.

All confirmed pregnancies in subjects who received study drug must be immediately reported to NBI (refer to [Section 10.6.3](#) for contact information), followed by fax or email of the pregnancy form to NBI CDS. A first trimester ultrasound will be required for all confirmed pregnancies. Pregnancies in subjects who received NBI-74788 will be followed until resolution (ie, termination [voluntary or spontaneous] or birth).

## 11. DOCUMENTATION OF DATA

### 11.1. Case Report Forms

The case report form data for this study are being collected with an electronic data capture (EDC) system [REDACTED]. The EDC system and the study-specific eCRFs will comply with Title 21 CFR Part 11. The documentation related to the validation of the EDC system is available through the vendor, [REDACTED], while the validation of the study specific eCRFs will be conducted by NBI and the required documentation will be maintained in the Trial Master File.

The investigator will document subject data in his/her own subject files. These subject files will serve as source data for the study. All eCRF data required by this protocol will be recorded by authorized study personnel in the EDC system, with the exception of data captured in an electronic format, which will be loaded electronically into the appropriate eCRFs. All data entered into the eCRF will be supported by source documentation. The eCRF for each subject must be reviewed by the investigator and signed on the appropriate eCRF page(s). This should be done as soon as possible after the subject completes the study.

The investigator or an authorized member of the investigator's staff will make any necessary additions/corrections to the eCRF. All change information, including the date, person performing the corrections, and reason for the change will be available via the electronic audit trail, which is part of the EDC system. The eCRFs will be reviewed periodically for completeness, legibility, and acceptability by NBI (or designee). NBI will also be allowed access to all source documents and medical records pertinent to the study in order to verify eCRF entries. The Principal Investigator will review the eCRFs for completeness and accuracy and enter his or her electronic signature on the eCRFs as evidence thereof.

[REDACTED] will provide access to the NBI portal of the EDC system for the duration of the study through a password-protected method of internet access. Such access will be removed from investigator sites at the end of the site's participation in the study. Data from the EDC system

will be archived on appropriate data media (CD-ROM, etc.) and provided to the investigator at that time as a durable record of the site's eCRF data. Although not required, the investigator may make paper printouts from that media.

All clinical work conducted under this protocol is subject to GCP regulations. This includes an inspection by NBI and/or health authority representatives at any time. The Principal Investigator will agree to the inspection of study-related records by health authority representatives and/or NBI.

### **11.2. Data Capture, Review, and Validation**

Data entered in the EDC system will be verified against the source data by NBI (or designee). Any discrepancies will be corrected on-line by authorized site personnel. After completion of the entry process, automated (computer-generated) logic checks will run in order to identify items such as inconsistent study dates. In addition, manual review/checks may be conducted by NBI on the data. Any inconsistencies/errors/omissions identified will be sent to the site (via an electronic query) for the necessary corrections to be made to the eCRF. Once entered and saved in an eCRF, data immediately become part of the study database and are available to NBI.

### **11.3. Coding Dictionaries**

AEs and medical history will be coded using the chosen version of the Medical Dictionary for Regulatory Activities (MedDRA). Prior and concomitant medications will be coded using the chosen version of the World Health Organization Drug Dictionary (WHODrug).

## **12. STATISTICAL AND ANALYTICAL PLAN**

Descriptive statistical methods will be used to summarize the data from this study. The term “descriptive statistics” refers to the number of subjects (n), mean, median, standard deviation (SD), standard error of the mean (SEM), minimum, and maximum for continuous variables, and refers to the number of subjects (or events) and percentage for categorical variables. Confidence intervals may be presented for selected variables as well. Summary statistics will be presented by dose cohort unless stated otherwise.

### **12.1. Analysis Sets**

Data summaries for this study will be based on the safety analysis set, which will include all subjects who receive a dose of study drug.

### **12.2. Sample Size**

The sample size for this study is based on practical clinical considerations with no formal statistical power calculations.

### 12.3. Handling of Missing Data

All available study data will be included in relevant summaries and data displays, including any available data for subjects with incomplete or missing data.

### 12.4. Disposition of Subjects

A summary of subject disposition will be prepared that displays the number of subjects who were enrolled, received study drug, and completed the study. The number of subjects who did not complete the study will be displayed both overall and by reason for discontinuation.

### 12.5. Demographics and Baseline Characteristics

Age, height, weight, BMI, gender, race, ethnic group, [REDACTED], and screening 17-OHP levels will be summarized with descriptive statistics.

### 12.6. Pharmacokinetic Data

Descriptive statistics and graphical displays will be presented for NBI-74788 and metabolites plasma concentrations by dose cohort and scheduled sampling time. For these summaries, values that are below the limit of quantitation (BLQ) will be set equal to zero.

Individual subject plasma concentration vs. time plots will also be presented.

The following plasma PK parameters will be calculated for NBI-74788 and metabolites using noncompartmental methods and summarized by dose cohort using descriptive statistics:

- Area under the plasma concentration versus time curve from 0 hours to last measurable concentration ( $AUC_{0-t_{last}}$ )
- Area under the plasma concentration versus time curve from 0 to 24 hours ( $AUC_{0-24}$ ) (Cohorts 1, 2, and 3)
- Area under the plasma concentration versus time curve from 0 to 12 hours ( $AUC_{0-12}$ ) (Cohort 4)
- Maximum plasma concentration ( $C_{max}$ )
- Time to maximum plasma concentration ( $t_{max}$ )
- Delay time between time of dosing and time of appearance of measurable test article ( $T_{lag}$ )
- Terminal half-life ( $t_{1/2}$ )
- Apparent terminal rate constant ( $\lambda_z$ )
- Apparent mean residence time (MRT)

Additional PK parameters for Day 14 only:

- Average plasma concentration at steady state ( $C_{avg}$ )
- Percent fluctuation at steady state (%fluctuation)
- Accumulation index at steady state

- Apparent systemic clearance after oral administration (CL/F) (NBI-74788 only)

## **12.7. Pharmacodynamic Data**

The primary PD assessments are: morning 17-OHP (serum; ng/dL) from the 0600, 0800, and 1000 hour samples (8-, 10-, and 12-hour postdose samples from Cohorts 1 and 2 and 11-, 13-, and 15-hour postdose samples from Cohorts 3 and 4). Secondary PD assessments are: 17-OHP at all other times, androstenedione (serum; ng/dL), testosterone (serum; ng/dL), cortisol (serum; µg/dL), and ACTH (plasma; pg/mL).

The PD assessments listed above will be summarized with descriptive statistics (including change from predose) and in graphical displays by dose cohort and timepoint.

## **12.8. Safety Data**

TEAEs, categorized by system organ class (SOC) and/or preferred term as defined by MedDRA, will be summarized by dose cohort as well as overall. A TEAE is defined as any AE that occurs after the first dose of study drug within a dose cohort. Any AE that occurred before the first dose of study drug will be considered a pretreatment AE. The TEAE tables will include the number and percentage of unique subjects experiencing each event. The TEAEs will also be tabulated in terms of the number and percentage of subjects experiencing events by relationship to study drug if a sufficient number of TEAEs is reported.

Data listings will be presented for SAEs, deaths, and AEs leading to premature discontinuation from the study.

Clinical laboratory data, vital sign measurements, ECG data, and other safety data will be summarized by dose cohort and timepoint (as appropriate) with descriptive statistics. Prior and concomitant medications and physical examination data will be presented in data listings.

## **12.9. Interim Analysis**

An interim analysis is not planned for this study.

# **13. REGULATORY AND ETHICAL ISSUES**

## **13.1. General Legal References**

The study will be carried out according to the provision of the US CFR, the US Food and Drug Administration (FDA), Canada Food and Drugs Act and Regulations, Health Canada, and the ICH Guidelines for GCP. All clinical work conducted under this protocol is subject to GCP rules. This includes an inspection by NBI or its representative, health authority, or IRB representatives at any time. The investigator must agree to the inspection of study-related records by health authority representatives and/or NBI or its designee.



### **13.2. Institutional Review Board**

The final approved protocol and the ICF will be reviewed by the IRB for the clinical site. The committee's decision concerning conduct of the study will be sent in writing to the investigator and a copy will be forwarded to NBI. The investigator must agree to make any required progress reports to the IRB, as well as reports of SAEs, life threatening problems, or death.

### **13.3. Protocol Adherence and Amendments**

The protocol must be read thoroughly and the instructions must be followed exactly. Any changes in the protocol will require a formal amendment. Such amendments will be agreed upon and approved in writing by the investigator and NBI. The IRB will be notified of all amendments to the protocol. Amendments to the protocol will not be implemented until written IRB approval has been received.

### **13.4. Required Documents**

The investigator must provide NBI or its representatives with the following documents before the enrollment of any subject (originals should be kept by the investigator in the investigator's regulatory document binder):

- Signed copy of the approved protocol signature page.
- Investigator's Brochure acknowledgement page.
- Completed and signed statement of investigator (Form FDA 1572 and/or Clinical Trial Site Information Form, as applicable).
- Curriculum vitae and current medical license of the investigator and subinvestigators.
- Financial disclosure information as required.
- Letter of approval from the IRB for the protocol and consent form.
- Copy of the IRB approved written ICF to be used.
- Laboratory documents (certifications/accreditations, normal ranges) if not provided by a central laboratory.

### **13.5. Informed Consent**

All subjects will provide informed consent before the performance of any study-related procedures.

Each subject's chart will include the signed ICF for study participation. When the study treatment is completed and the eCRF has been monitored, the ICF will be kept in the investigator's central study file. Regulatory authorities may check the existence of the signed ICF in this central study folder.

### **13.6. Study Monitoring**

Throughout the course of the study, the study monitor will make frequent contacts with the investigator. This will include emails, telephone calls, and on-site visits. During the on-site visits, the eCRFs will be reviewed for completeness and adherence to the protocol. As part of the data audit, source documents will be made available for review by the study monitor. The study monitor will also perform drug accountability checks and may periodically request review of the investigator study file to ensure completeness of documentation in all respects of clinical study conduct.

Upon completion of the study, the study monitor will arrange for a final review of the study files after which the files should be secured for the appropriate time period. The investigator or appointed delegate will receive the study monitor during these on-site visits, will cooperate in providing the documents for inspection, and respond to inquiries. In addition, the investigator will permit inspection of the study files by authorized representatives of the regulatory agencies.

### **13.7. Quality Assurance**

The study will be conducted in accordance with NBI's standard operating procedures designed to ensure that all procedures are in compliance with GCP, FDA Guidelines, Health Canada Guidelines, and according to national law. Quality assurance audits may be conducted at the discretion of NBI.

### **13.8. Record Retention**

Federal regulations require that records of drug disposition, eCRFs, and all reports of this investigation shall be retained by the investigator for a minimum of 2 years after notification by NBI that the regulatory authorities have been notified of the study's termination, or 2 years after approval of the marketing application. If the investigator is unable to retain the study documents for the required amount of time, NBI must be informed of the individual who will be assuming this responsibility.

### **13.9. Confidentiality**

NBI and the clinical site affirm and uphold the principle of the subject's right to protection against invasion of privacy. Throughout this study, all data will be identified only by an identification number and, where applicable, subject's initials and birth date.

All information concerning this study and which was not previously published is considered confidential information. This confidential information shall remain the sole property of NBI; it shall not be disclosed to others without written consent of NBI; and shall not be used except in the performance of this study.

The information compiled during the conduct of this clinical study is also considered confidential and may be disclosed and/or used only by NBI as deemed necessary. To allow the use of the information derived from this clinical study and to ensure compliance with current federal regulations, the investigator is obliged to furnish NBI with the complete test results and all data compiled in this study.

#### **14. STUDY COMMENCEMENT AND DISCONTINUATION**

Upon satisfactory receipt of all required regulatory documents, NBI (or designee) will arrange that all study material be delivered to the study site. Subject entry should not begin until after the required regulatory documents are confirmed as received, and the Investigator Meeting/Initiation Meeting has occurred. All personnel expected to be involved in the conduct of the study will undergo orientation to include review of study protocol, instructions for eCRF completion, AE reporting, and overall responsibilities including those for drug accountability and study file maintenance.

If the study is discontinued, all subjects should undergo a complete follow up examination. Any clinically relevant finding, including laboratory values of potential clinical concern, and adverse experiences will be followed until they resolve or return to a clinically acceptable level.

## 15. REFERENCES

- Cheng TQ, Speiser PW. Treatment outcomes in congenital adrenal hyperplasia. *Adv Pediatr.* 2012;59(1):269-81.
- Elnecape RH, Kopacek C, Rigatto M, Keller Brenner J, Sisson de Castro JA. Bone mineral density in girls with classical congenital adrenal hyperplasia due to CYP21 deficiency. *J Pediatr Endocrinol Metab.* 2008 Dec;21(12):1155-62.
- Hertzberg VS, Hinton CF, Therrell BL, Shapira SK. Birth prevalence rates of newborn screening disorders in relation to screening practices in the United States. *J Pediatr.* 2011 Oct; 159(4):555-60.
- King JA, Wisniewski AB, Bankowski BJ, Carson KA, Zacur HA, Migeon CJ. Long-term corticosteroid replacement and bone mineral density in adult women with classical congenital adrenal hyperplasia. *J Clin Endocrinol Metab.* 2006 Mar;91(3):865-9.
- Merke DP, Poppas DP. Management of adolescents with congenital adrenal hyperplasia. *Lancet Diabetes Endocrinol.* 2013 Dec;1(4):341-52.
- Migeon CJ, Wisniewski AB. Congenital adrenal hyperplasia owing to 21-hydroxylase deficiency. Growth, development, and therapeutic considerations. *Endocrinol Metab Clin North Am.* 2001 Mar;30(1):193-206.
- Overall JE, Gorham DR. The Brief Psychiatric Rating Scale (BPRS). *Psychological Reports.* 1962;10:799-812.
- Overall JE, Gorham DR. The Brief Psychiatric Rating Scale (BPRS): Recent Developments in Ascertainment and Scaling. *Psychopharmacol Bull.* 1988;24:97-9.
- Trakakis E, Basios G, Trompoukis P, Labos G, Grammatikakis I, Kassanos D. An update to 21-hydroxylase deficient congenital adrenal hyperplasia. *Gynecol Endocrinol.* 2010 Jan;26(1):63-71.

## **16. APPENDICES**

### **APPENDIX A. BRIEF PSYCHIATRIC RATING SCALE**





## **APPENDIX B. COLUMBIA-SUICIDE SEVERITY RATING SCALE**

Two versions of the C-SSRS will be used in this study: the Screening/Baseline version and the Since Last Visit version.



# **COLUMBIA-SUICIDE SEVERITY RATING SCALE (C-SSRS)**

Baseline/Screening Version

Version 1/14/09

*Posner, K.; Brent, D.; Lucas, C.; Gould, M.; Stanley, B.; Brown, G.; Fisher, P.; Zelazny, J.;  
Burke, A.; Oquendo, M.; Mann, J.*

*Disclaimer:*

*This scale is intended to be used by individuals who have received training in its administration. The questions contained in the Columbia-Suicide Severity Rating Scale are suggested probes. Ultimately, the determination of the presence of suicidal ideation or behavior depends on the judgment of the individual administering the scale.*

*Definitions of behavioral suicidal events in this scale are based on those used in **The Columbia Suicide History Form**, developed by John Mann, MD and Maria Oquendo, MD, Conte Center for the Neuroscience of Mental Disorders (CCNMD), New York State Psychiatric Institute, 1051 Riverside Drive, New York, NY, 10032. (Oquendo M. A., Halberstam B. & Mann J. J., Risk factors for suicidal behavior: utility and limitations of research instruments. In M.B. First [Ed.] Standardized Evaluation in Clinical Practice, pp. 103 -130, 2003.)*

*For reprints of the C-SSRS contact Kelly Posner, Ph.D., New York State Psychiatric Institute, 1051 Riverside Drive, New York, New York, 10032; inquiries and training requirements contact [posnerk@nyspi.columbia.edu](mailto:posnerk@nyspi.columbia.edu)*

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# COLUMBIA-SUICIDE SEVERITY RATING SCALE (C-SSRS)

Since Last Visit

Version 1/14/09

*Posner, K.; Brent, D.; Lucas, C.; Gould, M.; Stanley, B.; Brown, G.; Fisher, P.; Zelazny, J.;  
Burke, A.; Oquendo, M.; Mann, J.*

*Disclaimer:*

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