Study Title: Randomized Study of Daytime vs. Delayed Eating: Effect on Weight and Metabolism

PI: Kelly C. Allison

Document title: IRB Protocol with Stat plan (final version before study procedures were completed)

Date of document: 2.1.17

Protocol Details

Basic Info

Confirmation Number:	**cdaabihj**
Protocol Number:	**820064**
Created By:	**BECHTEL, COLLEEN**
Principal Investigator:	**ALLISON, KELLY C**
Protocol Title:	**Randomized study of daytime vs. delayed eating: Effect on weight and metabolism**
Short Title:	**Daytime vs delayed eating, weight and metabolism**
Protocol Description:	**To determine whether timing of eating affects weight, adiposity, and energy metabolism. Healthy participants will be provided isocaloric meals and snacks to be consumed in one of two prescribed eating conditions -- daytime eating and delayed eating -- in a randomized, cross-over design.**
Submission Type:	**Biomedical Research**
Application Type:	**FULL**

Resubmission*
Yes

Study Personnel

Principal Investigator

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HS Training Completed:	**Yes**
Training Expiration Date:	**03/06/2017**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Study Contacts

Name:	**AHIMA, REXFORD S**
Dept / School / Div:	**4231 - DM-Endocrinology, Diabetes & Metabolism**
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HS Training Completed:	**Yes**
Training Expiration Date:	**02/08/2016**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

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HS Training Completed:	**Yes**
Training Expiration Date:	**07/12/2019**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Other Investigator

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HS Training Completed:	**Yes**
Training Expiration Date:	**08/09/2015**
Name of course completed :	**CITI Protection of Human Subjects Research Training - ORA**

Responsible Org (Department/School/Division):

4429 - PS-Weight Disorders

Key Study Personnel

Name:	**SPAETH, ANDREA**
Department/School/Division:	**SL-Center for Sleep**
HS Training Completed:	**Yes**
Training Expiration Date:	**04/07/2017**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**RICKELS, MICHAEL R**
Department/School/Division:	**DM-Endocrinology, Diabetes & Metabolism**
HS Training Completed:	**Yes**
Training Expiration Date:	**11/25/2016**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**NIKOLAJUK, KAITLYN M**
Department/School/Division:	**SM-DN-Biomedical Graduate Studies**
HS Training Completed:	**Yes**
Training Expiration Date:	**09/18/2017**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**ALFARIS, NASREEN**
Department/School/Division:	**DM-Endocrinology, Diabetes & Metabolism**
HS Training Completed:	**Yes**
Training Expiration Date:	**07/21/2016**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**UDELL, SEAN**
Department/School/Division:	**Health System**
HS Training Completed:	**Yes**
Training Expiration Date:	**02/15/2019**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**CHITTAMS, JESSE L**
Department/School/Division:	**Office of Nursing Research**
HS Training Completed:	**Yes**
Training Expiration Date:	**04/21/2016**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Name:	**KIEHL, EVA K**
Department/School/Division:	**The College**
HS Training Completed:	**Yes**
Training Expiration Date:	**05/13/2018**
Name of course completed:	**CITI Protection of Human Subjects Research Training - ORA**

Disclosure of Significant Financial Interests*
Does any person who is responsible for the design, conduct, or reporting of this research protocol have a **FINANCIAL INTEREST**?
No

Penn Intellectual Property*
To the best of the Principal Investigator's knowledge, does this protocol involve the testing, development or evaluation of a drug, device, product, or other type of intellectual property (IP) that is owned by or assigned to the University of Pennsylvania?

Certification
I have reviewed the *Financial Disclosure and Presumptively Prohibited Conflicts for Faculty Participating in Clinical Trials* and the *Financial Disclosure Policy for Research and Sponsored Projects* with all persons who are responsible for the design, conduct, or reporting of this research; and all required Disclosures have been attached to this application.
Yes

Biomedical Research

Investigator Initiated Trial
Is this an investigator-initiated trial?
No

Drugs or Devices*
Does this research study involve Drugs or Devices?
No

IND Exemption

For studies that fall under an IND exemption, please provide the number below

For studies including IND or IDE's, please provide the number(s) below

IDE Review*
NOTE: For research involving investigational devices, you are required to review the guidance on Managing Research Device Inventory. Consult the Penn Manual for Clinical Research: https://somapps.med.upenn.edu/pennmanual/secure/pm/investigational-product-management Please check the box Yes if you have reviewed the guidance.
Yes

Research Device Management*
Please indicate how research device(s) will be managed.
Not Applicable (no investigational devices)

Drug, Herbal Product or Other Chemical Element Management *
Please indicate how drugs, herbal products or other chemical entities will be managed.
Not Applicable (no drugs, herbal products or other chemical entities)

Radiation Exposure*
Are research subjects receiving any radiation exposure (e.g. X-rays, CT, Fluoroscopy, DEXA, pQCT, FDG, Tc-99m, etc.) that they would not receive if they were not enrolled in this protocol?
Yes

Gene Transfer*
Does this research involve gene transfer (including all vectors) to human subjects?
No

Human Source Material*
Does this research include collection or use of human source material (i.e., human blood, blood products, tissues or body fluids)?
Yes

CACTIS and CT Studies*
Does the research involve Center for Advanced Computed Tomography Imaging Services (CACTIS) and CT studies that research subjects would not receive if they were not part of this protocol?
No

CAMRIS and MRI Studies*
Does the research involve Center for Advanced Magnetic Resonance Imaging and Spectroscopy (CAMRIS) and MRI studies that research subjects would not receive if they were not part of this protocol?
No

Investigational Agent or Device within the Operating Room*
Does the research project involve the use of an investigational agent or device within the Operating Room?
No

Cancer Related research not being conducted by an NCI cooperative group*
Does this protocol involve cancer-related studies in any of the following categories?
No

Processing of Materials*
Will the research involve processing (such as over encapsulating, or compounding)?
No

In-House Manufacturing of Materials*
Will the research involve processing (such as over encapsulating, or compounding)?
No

Medical Information Disclosure*
Does the research proposal involve the use and disclosure of research subject's medical information for research purposes?
Yes

If the answer is YES, indicate which items is is provided with this submission:

Modified research informed consent document that incorporates HIPAA requirements

CTRC Resources*
Does the research involve CTRC resources?
Yes

Pathology and Laboratory Medicine Resources*
Will samples be collected by hospital phlebotomy and/or processed or analyzed by any of the clinical laboratories of the University of Pennsylvania Health System?
No

Research Involves Apheresis, Cell Collection, and/or Blood Product Collection*
Does this research involve collection of blood products in the Penn Donor Center and/or the use of apheresis for treatment or collection of cells or other blood components?
No

Research involving blood transfusion or drug infusions*
Will your research involve blood transfusion or infusion of study drug in 3 Ravdin Apheresis Unit for research purposes?
No

Trial in Radiation Oncology
Is this research a prospective trial being done in Radiation Oncology, and if so, has this protocol been approved by the Radiation Oncology Protocol committee?
No

Study in Radiation Oncology
Is this research a retrospective study being done in Radiation Oncology, and if so, has this project been reviewed by the Radiation Oncology Clinical Research Group?
No

Use of UPHS services*
Does your study require the use of University of Pennsylvania Health System (UPHS) services, tests or procedures*, whether considered routine care or strictly for research purposes?
No

Primary Focus*
Mechanistic or physiologic study in human subjects (T1 Translational research in humans or Phase I drug research)

Protocol Interventions

	Sociobehavioral (i.e. cognitive or behavioral therapy)
	Drug
	Device - therapeutic
	Device - diagnostic (assessing a device for sensitivity or specificity in disease diagnosis)
	Surgical
x	**Diagnostic test/procedure (research-related diagnostic test or procedure)**
x	**Obtaining human tissue for basic research or biospecimen bank**
x	**Survey instrument**
	None of the above

The following documents are currently attached to this item:

There are no documents attached for this item.

Department budget code

None

Multi-Site Research

Other Sites

No other sites

Management of Information for Multi-Center Research
n/a

The following documents are currently attached to this item:

There are no documents attached for this item.

Protocol

Abstract
Of the many factors contributing to the obesity epidemic, the timing of food consumption is now recognized as a significant contributor to body weight regulation. Disruption of the normal timing of feeding in mice has been found to promote weight gain, alter serum leptin levels, and induce hypothalamic leptin resistance. Delays in daytime eating have also been found to increase the risk of obesity and metabolic syndrome in humans. Disrupting normally-timed sleep-wake cycles produces major effects on body weight, adiposity, and metabolism, but it remains unclear whether meal timing independently plays a causal role in metabolic dysregulation when sleep-wake cycles are unaltered. The purpose of this study is to determine if, controlling for eating and sleep timing, caloric intake, and exercise, daytime vs. delayed eating affects body mass, adiposity, and energy metabolism in healthy adults.

Objectives

Overall objectives
To determine if timing of food consumption (daytime vs. delayed eating) affects body mass, adiposity, and energy metabolism by enrolling 30 healthy men and women in a randomized cross-over design study.

Primary outcome variable(s)
To determine if timing of food consumption (daytime vs. delayed eating) affects body mass (kg) after a period of two months.

Secondary outcome variable(s)
Our secondary outcomes will be assessed before and after each eating condition for a total of four assessment periods. Blood samples will be taken every four hours for 24 hours in the CTRC during each assessment. Metabolic testing and DEXA will occur once at each of the four assessment periods. Specific secondary outcomes include: Amplitude and phase of circadian rhythms of leptin, cortisol, and melatonin; Fasting levels of glucose, insulin, adiponectin, cholesterol, triglycerides, and non-esterified fatty acids; Energy expenditure and fuel oxidation as measured by indirect calorimetry; and Body composition measured using DEXA

Background
Obesity affects one-third of the general population and is related to many serious medical comorbidities, including diabetes, heart disease, cancer, and obstructive sleep apnea. Behavioral weight loss approaches are effective at helping persons reduce weight by 5-10% of their initial body weight , but prevention of obesity remains a primary public health goal, along with identifying behavioral strategies to optimize weight loss and maintenance. Of the many factors contributing to the obesity epidemic, the timing of food consumption is now recognized as a significant contributor to body weight regulation. The underlying mechanisms governing the circadian rhythms of fundamental animal

processes such as sleeping and eating, are well characterized. The circadian system enables organisms to synchronize behaviors, metabolism, and physiological processes to sleep-wake cycles. The core clock mechanism is based on a feedback loop involving the transcription factors BMAL1, CLOCK, and NPAS and their targets. In mammals, circadian rhythms are organized hierarchically with the hypothalamic suprachiasmatic nucleus (SCN) controlling a network of central and peripheral clocks. The SCN responds mainly to light and synchronizes behavioral and physiological rhythms via circadian oscillations in extra-SCN brain circuits and peripheral tissues. When food is abundant and animals are kept under normal light-dark (LD) cycles, photoperiod is the primary zeitgeber (time-giver) for the master clock in the SCN, and produces a near-24 hour rhythm in feeding behavior and metabolism. However, a disruption in timing of food availability induces another regulator known as the food entrainable oscillator. Unlike the SCN, the peripheral clocks in the liver and other organs respond to the timing of feeding. The mechanisms linking disruption of meal timing and metabolic dysfunction have been studied more carefully in rodents compared to humans. Deletion of canonical clock genes in mice alters feeding behavior, food intake, and adiposity. Macronutrients (i.e. glucose, fatty acids, and amino acids) and nutrient-sensing molecules (e.g., AMPK, SIRT1, mTOR, and CRTC2) entrain central and peripheral clocks, changing the timing and amplitude of gene expression rhythms and metabolic pathways. Co-I Ahima and colleagues found that restriction of ad libitum feeding to light in mice resulted in a parallel phase-shifting of circadian rhythms of several hormones, such that the nadir of insulin and leptin occurred prior to feeding and peaked after feeding, while corticosterone peaked before feeding and declined afterwards. Food restriction in rodents housed in normal LD cycles triggered food anticipatory activity and increased bouts of wakefulness and food-seeking behavior. Notably, mice restricted to light feeding developed obesity. In contrast, mice restricted to 8 h of feeding during the dark cycle were protected from obesity, inflammation, diabetes, and liver disease. Paschos et al. showed that deletion of Arntl (BMAL) in the adipose tissue of mice produces circadian clock dysfunction in adipocytes causing a shift in the diurnal rhythm of food intake, obesity, and increased stored fat without a change in total locomotor activity or caloric intake. Further, Fonken et al. exposed mice during the dark phase to either dim light (approximating human artificial light exposure at night) or daytime light; both types of exposure produced a significant increase in light phase intake, weight gain, fat storage, and impaired glucose tolerance compared to mice exposed to normal LD patterns. Ahimas lab compared the metabolic profiles of mice housed in normal LD cycles restricted to ad libitum feeding during the light cycle (unpub. data). Twelve week-old male C57BL/6J mice were housed singly in 12-h light:12-h dark cycles, and fed normal (low fat) chow diet ad libitum (LD-Fed), or restricted to ad libitum feeding during the light phase (L-Fed). Food intake was lower in L-Fed than LD-Fed for 2d, increased above LD-Fed levels for 5d, and was similar to LD-Fed thereafter. However, the L-Fed mice developed excess adiposity after 2 wk. Analysis of metabolic parameters showed increased locomotor activity in L-Fed mice before food presentation, consistent with food anticipation. Energy expenditure was reduced and respiratory quotient circadian patterns were disrupted in L-Fed compared to LD-Fed, indicating a dysregulation of glucose and fat oxidation. Serum leptin levels peaked at night and decreased during the day in LD-Fed mice. In contrast, serum leptin levels rose significantly after feeding and decreased soon after the onset of the dark period in L-Fed mice. Hypothalamic leptin sensitivity was also observed in LD-Fed and L-Fed mice, suggesting leptin resistance in L-Fed mice. In other experiments, we euthanized LD-Fed and L-Fed mice at 0900h and 2100h, respectively, harvested hypothalami, and measured mRNA expression of neuropeptide targets of leptin using real-time PCR. AGRP and NPY mRNA levels were increased and the POMC mRNA level was decreased in L-Fed mice, suggesting hypothalamic leptin resistance. We hypothesize that disrupting the normal timing of feeding induces obesity, through hypothalamic leptin resistance that impairs its ability to increase energy expenditure. Recent studies have shown that a reduction in leptin signaling in mice disrupts the circadian rhythm of feeding and metabolic activity. Furthermore, leptin acts on neurons in the arcuate nucleus to integrate circadian feeding, locomotor activity and temperature rhythms in rats. Delays in the usual daytime eating pattern increase the risk of obesity and metabolic syndrome in humans. Almost 15 million Americans work full time on evening shifts, night shifts, or rotating shifts, which relates to a higher prevalence of obesity, diabetes, and cardiovascular morbidity. Circadian misalignment accompanying shift work decreases insulin sensitivity, alters the circadian rhythms of leptin, cortisol and glucose, and may cause high blood pressure. Short sleep duration and/or sleep deprivation are also associated with diabetes, increased appetite and caloric intake, weight gain, and obesity. In a large experimental study, Co-I Goel and colleagues found sleep deprivation promoted weight gain compared to a control (normal sleep) condition and increased caloric intake, particularly during late-night hours. Delayed sleep timing is also related to poorer diet and later eating times, the latter of which relates to higher BMI. Gluck et al. showed that subjects who ate at night (between 2300h0500h) during an inpatient study had a higher 24h respiratory quotient, higher rates of

carbohydrate oxidation, and lower rates of fat oxidation, suggesting a phenotype associated with increased energy intake and weight. Shift work and many sleep disorders alter the circadian rhythms of leptin, adiponectin, resistin, insulin resistance, diabetes, dyslipidemia, and cardiovascular morbidity. Although these findings indicate that disrupting normally-timed sleep-wake cycles produces major effects on body weight, adiposity, and metabolism, it is unclear whether meal timing independently plays a causal role in metabolic dysregulation when sleep-wake cycles are unaltered. The human phenotype of a delayed pattern of eating, such as that described in the animal studies above, is consistent with NES. NES is defined by two core behaviors, evening hyperphagia (consumption of 25% of daily caloric intake after dinner) and nocturnal ingestions 2/wk. The prevalence of NES is estimated at 1.5-6% of community samples and is positively related to BMI in epidemiological and clinical studies. While we have shown that sleep efficiency is reduced in NES, sleep onset and offset is similar to control participants in outpatient and inpatient settings, even with increased caloric intake. Despite the absence of a delayed sleep period, we previously reported that persons with NES showed attenuated circadian rhythms for food intake, cortisol, ghrelin, and insulin, but increased TSH amplitude during a 24h blood draw with ad libitum access to food. Those with NES also showed phase delays of food intake, leptin, cortisol, insulin, and melatonin, with a phase inversion of glucose and a phase advance in ghrelin. Thus, results from various populations and methodologies strongly suggest that nighttime eating may contribute to weight gain, or, at a minimum, maintenance of higher weight. Further, just as in animal studies, nighttime eating may exacerbate medical conditions in humans, such as diabetes mellitus. Indeed, diabetic patients with nighttime eating are more likely to have HbA1c values 7 and 2 diabetic complications. Collectively, these studies demonstrate the link between night eating behaviors and increased weight and metabolic dysfunction. Therefore, it is important to understand the impact of delayed eating on weight and energy metabolism, independent of interrupted or phase-shifted sleep or psychiatric distress (i.e., in NES). Descriptive clinical studies of non-eating-disordered adults found that breakfast intake was negatively related to total daily caloric intake, while the proportion of food consumed late at night was positively related to total intake. A recent observational study of 420 Spaniards seeking weight loss with a standardized Mediterranean diet found that late eaters (those eating the midday meal after 1500h), compared to early eaters (eating the midday meal before 1500h), lost significantly less weight (7.7 kg vs. 9.9 kg, respectively) during the 5 mo study, despite similar self-reported energy intake, sleep duration, macronutrient content, estimated energy expenditure, and appetitive hormone profiles. Only three experimental studies in humans have tested the effect of nighttime eating on weight using a randomized cross-over design. Qin et al. assessed 7 students assigned to typical daytime vs. delayed eating schedules for 3 wks in each condition. After the delayed condition, the peaks of melatonin and leptin were attenuated, glucose increases were maintained across the early morning hours, and insulin secretion decreased, suggesting an impaired insulin response to glucose. In the second study, 11 women ate either a morning (1000h) or evening (2300h) snack in addition to their 3 meals, which they were instructed to eat at their usual times, for 13d periods. The evening, as compared to the daytime, snack condition decreased fat oxidation and increased total and LDL cholesterol, but glucose and insulin levels did not differ, suggesting that eating at night changes fat metabolism. Finally, LeCheminant et al. examined 27 males who were prohibited from eating between 1900h-0600h for 2 wk, or ate as per their usual schedule for 2 wk, with a 1 wk intervening washout period. They consumed 2420 kcals in the restricted vs. 2664 kcals in the usual eating condition (with 700 kcals consumed after 1900h). Weight change was -0.04 kg for the restricted condition and +0.06 kg for usual eating (p0.001). Thus, the short-term evening food restriction resulted in a small but likely clinically relevant caloric reduction. It is unknown if these intake differences would continue over time. Notably, in contrast to the current proposal, none of these studies controlled for, or carefully monitored, calorie levels, macronutrient content, activity levels, or timing of sleep-wake cycles.

Study Design

Phase*
Not applicable

Design
This is a 5-month, randomized, cross-over design study. Upon completion of screening and baseline assessments, participants will be assigned to the first eating condition for 2 months. They will complete an assessment, followed by a 2-week washout period and an additional assessment visit. Participants will then be assigned to the second eating condition for 2 months. Upon completion of the second eating condition, participants will complete the 4th and final assessment. 30 healthy participants with access to a personal smartphone, tablet, or other electronic devices will be recruited over a one-year

period.

Study duration
The estimated duration of the study is 2 years. It will take ~12 months to recruit 30 participants. Each participant will be engaged in study procedures for ~5 months (2 weeks of screening/baseline assessments, 2 months in first eating condition, 2 week wash-out period, 2 months in second eating condition). Recruitment will likely begin in July, 2014.

Resources necessary for human research protection
Describe research staff and justify that the staff are adequate in number and qualifications to conduct the research. Describe how you will ensure that all staff assisting with the research are adequately informed about the protocol and their research related duties. Please allow adequate time for the researchers to conduct and complete the research. Please confirm that there are adequate facilities for the research.
Kelly Allison, PhD, the Principal investigator, will be responsible for the overall conduct of this research. Along with Dr. Allison, co-investigators Namni Goel, PhD, an expert in circadian rhythms and Rexford Ahima, MD, PhD, an endocrinologist who will serve as medical director. Michael Rickels, MD, will serve as admitting physician for the study. Additional staff available include the research coordinator (Madelyn Ruggieri) who will be responsible for recruitment, initial screening, study logistics, and delivery of food; Nasreen Alfaris, MD, MPH, Co-Medical Director at CWED will be available for any medical issues that arise and reviewing DXA scans. CTRC services will also be involved, including Lisa Basel-Brown at the metabolic kitchen and nursing staff for support of the 24 hour inpatient assessments. Metabolic testing will also occur at the CTRC in concert with Dr. Goel's resources in Experimental Psychiatry. Andrea Spaeth will perform the metabolic testing, as she has in previous studies. Our offices at the Center for Weight and Eating Disorders are adequate for recruitment and screening of the participants. We will also use the CTRC at Presbyterian Hospital. It houses a DEXA machine that will be used at each of the pre-post eating condition assessments. We wil recruit our 30 participants from within the UPenn and West Philadelphia community so they are in close proximity to receive the food that we will supply. These will be healthy controls with a BMI of 19 - 30 kg/m2. We believe that this goal is feasible within the two-year research window. The PI (a clinical psychologist) or co-I Ahima (a physician) will be able to refer the participants to appropriate medical or psychological services as needed.

Characteristics of the Study Population

Target population
Thirty adult participants ages 21-50, BMI of 19-30 kg/m2 and stable weight (+/- 10 lbs) over the previous 6 months with access to a personal smart phone, tablet, or other electronic device and who live/work within a 5 mile radius of the Hospital of UPenn.

Subjects enrolled by Penn Researchers
30

Subjects enrolled by Collaborating Researchers
0

Accrual
Between UPenn, Penn Medicine, and the population of West Philadelphia, an adequate pool of adults live/work within 5 miles of the Hospital of UPenn. PI Allison recently completed a survey of 201 patients at an obstetrics clinic at Penn Medicine and found 91% had texting access and 79% had a smartphone. Thus, we do not anticipate any problem recruiting 30 healthy adult participants within our inclusion criteria.

Key inclusion criteria
Adults of all races and ethnicities; Age 21-50; BMI 19-30 kg/m2; stable weight (+/- 10 lbs) over the previous 6 months; Women must be pre-menopausal with regular menstrual cycles.

Key exclusion criteria
Regular exercise more than 4 d/wk, for 60 min measured by exercise logs and actigraphy; normal activity levels are required throughout the study (+/-30 min/wk of baseline level). Unstable, serious medical conditions; use of medicine linked to weight gain/loss; cancer, diabetes, or autoimmune disease; use of illicit drugs, melatonin, diuretics or hypnotics; current weight loss program; presence of a sleep disorder (determined by surveys and actigraphy); night shift work; extreme chronotypes (extreme larks or night owls); habitual waking outside of 0600 h-0900h; habitual bedtime outside of 2200h to 2400H; and sleep duration outside of 6.5 to 8.5 h/night. Psychiatric exclusions will be depression (Patient Health Questionnaire-9 score 9), lifetime bipolar disorder, psychosis, or lifetime eating disorder; or any other severe psychiatric disorder judged to interfere with study adherence as assessed by the MINI International Neuropsychiatric Interview version 6.0.0. Participants must be non-smokers. Participants will be excluded if they are pregnant. A urine pregnancy test will be conducted during the study screening visit. A urine drug test will also be collected at the screening visit.

Vulnerable Populations

	Children Form
	Pregnant women (if the study procedures may affect the condition of the pregnant woman or fetus) Form
	Fetuses and/or Neonates Form
	Prisoners Form
	Other
x	**None of the above populations are included in the research study**

The following documents are currently attached to this item:

There are no documents attached for this item.

Populations vulnerable to undue influence or coercion
We will exclude any participants who work in the Center for Weight and Eating Disorders, the Unit for Experimental Psychiatry, and Dr. Ahima's lab. We will not exclude other employees or students of the University of Pennsylvania. If employees or students from the University of Pennsylvania are enrolled, they will be informed that their involvement in the study in no way affects their standing with the University of Pennsylvania.

Subject recruitment
Participants will be recruited through postings on campus and nearby workplaces, internet advertisements, and local media appearances. Flyers and a script are attached here.

Will the recruitment plan propose to use any Penn media services (communications, marketing, etc.) for outreach via social media avenues (examples include: Facebook, Twitter, blogging, texting, etc.) or does the study team plan to directly use social media to recruit for the research?
No

The following documents are currently attached to this item:

Subject recruitment (delayedeatingad8.8.14.docx)

Subject recruitment (delayedeatingflyer.pdf)

Subject recruitment (03.24.15metroad.pdf)

Subject recruitment (03.24.15campusflyer.pdf)

Subject recruitment (08.26.15campusflyer-final.pdf)

Subject compensation*
Will subjects be financially compensated for their participation?
Yes

The following documents are currently attached to this item:

There are no documents attached for this item.

If there is subject compensation, provide the schedule for compensation per study visit or session and total amount for entire participation, either as text or separate document

Participants will be provided all meals and snacks for a total of 4 months at an estimated value of $1000.00. Participants will be compensated $300 for each of the 4 CTRC assessments, with a $300 bonus at study completion ($1500 total, paid by check).

Study Procedures

Suicidal Ideation and Behavior
Does this research qualify as a clinical investigation that will utilize a test article (ie- drug or biological) which may carry a potential for central nervous system (CNS) effect(s)?
No

Procedures
After an initial phone screen to determine eligibility and assess availability, the screening visit will be scheduled. Study staff will complete a clinical interview assessing typical eating and sleep patterns, weight history, and psychiatric status. Participants will undergo a medical history and physical, and their weight, height, and waist circumference will be measured. Participants will receive logs to record food, physical activity (detailing deliberate bouts of exercise), and sleep-wake, as used in our previous studies of NES, and an actigraph to wear for 10d. Upon completion they will return the completed logs and actigraphs. If they meet the inclusion criteria after this 10d screening period, they will be scheduled to undergo a history and physical at the CTRC and, subsequently, their baseline assessment and randomization. After the 28-h baseline assessment, participants will be randomized to begin the study with either the daytime or delayed eating condition, and they will receive their first 3d of food. The participants will also receive food, sleep, and exercise logs and actigraphs, which they will use for the studys duration. Assessments will be conducted at four points:1) baseline; 2) after completion of condition 1; 3) after the 2 wk wash-out period; and 4) after completion of condition 2 . Each assessment will include 28h at the Clinical and Translational Research Center (CTRC) where participants will eat according to their typical schedule (for points 1 and 3) or their assigned schedule - daytime or delayed (for points 2 and 4). 10mL (2 teaspoonfuls) of blood will be drawn at 4h intervals (0800h, 1200h, 1600h, 2000h, 2400h, and 0400h) to measure amplitude and phase of circadian rhythms of leptin, cortisol, and melatonin. Fasting levels of glucose, insulin, adiponectin, cholesterol, triglycerides, and non-esterified fatty acids (NEFAs) will be measured at the beginning of each assessment session. All blood assays will be performed by Heather Collins, Ph.D. and her staff at the RIA Core Lab of the Penn Diabetes Center. Energy expenditure measurement: On the morning after blood draws and an overnight fast, indirect calorimetry will be used to assess energy expenditure and fuel oxidation (respiratory quotient). One technique for assessing energy expenditure involves measuring a proxy of heat loss using indirect calorimetry. The body's energy production is dependent on oxygen (O2) and each liter of O2 consumed by the body is equivalent to ~5 kcal; therefore, O2 consumption (VO2) provides an accurate indirect way of measuring a persons energy expenditure (Leonard, 2012). In addition to VO2, the respiratory quotient (the ratio of CO2 production (VCO2) to VO2), can be measured. Because the caloric equivalent for each liter of O2 consumed varies as a function of respiratory quotient, both measurements are required to calculate resting metabolic rate. Diet induced thermogenesis represents the increase in energy expenditure above resting metabolic rate divided by the energy content of the food ingested and is commonly expressed as a percentage. In this study, a Parvo Medics True One 2400 Metabolic Monitor will be used to measure indirect calorimetry. The metabolic monitor is a compact, integrated metabolic measurement system which contains O2 and CO2 analyzers, a device for measuring breathing (ventilation) rates, a gas sampling system, and a computer interface that allows for the transfer of raw data. A canopy/hood interface is used to collect air samples. This metabolic monitor has been widely used in clinical and experimental settings and has been validated (Bassett et al., 2001; Cooper et al., 2009). The metabolic monitor will assess indirect calorimetry for each subject a total of 4 times (once during each inpatient assessment). During each of the four assessments, subjects resting metabolic rate will be assessed the morning after continuous blood draws with each measurement lasting 45 minutes (10-15 minute adaptation period, followed by 30 minutes of testing). During the

tests, each subject lays supine in bed with his/her head under a plastic canopy which collects the expired air and is told to remain silent and still and to breathe normally. Resting metabolic rate will be measured after a 10 h overnight fast. These metabolic measurements using indirect calorimetry are routinely conducted (and have IRB approval) for our experimental sleep studies (under Co-I Dr. Goel's leadership). Body composition will then be measured using DEXA at the Presbyterian Hospital CTRC and will be reviewed by study personnel (i.e., our study's medical director, Co-I Dr. Ahima, or Drs. Rickels or Alfaris. The scans will take approximately 30 minutes, during which time the participants lie flat and still. Participants will receive their food and released at the completion of this assessment. None of these assessment would be considered part of standard care as these are healthy participants. All assessments are performed exclusively for research purposes. Dr. Ahima will serve as the medical director of the study and Dr. Rickels will be available for urgent issues during assessments. Research staff will deliver meals and snacks from the CTRC metabolic kitchen every 3d, pick up uneaten food, and collect and provide new actigraphs (1/wk). Personalized menus will accompany the meals and participants will check off each food item they consume and note any modifications to their meals and snacks. The CTRC staff will provide portion size training at baseline, and all participants will receive measuring cups. Participants will purchase their own beverages and record them on the menus. Mean beverage intake, as reported at baseline, will be factored into each participant's total daily caloric and macronutrient totals. CTRC staff will provide a diet consisting of approximately 55% carbohydrate, 15% protein, and 30% fat with an isocaloric energy level. These parameters will remain constant across conditions. Staff will send daily queries by text or e-mail to monitor adherence to the eating, sleep, and exercise parameters (Appendix B) and intervene the same day if participants report consuming less than 80% (4/5) of the provided meals and snacks, eating or sleeping outside of the assigned time windows, or exercising more than prescribed. Staff will also download actigraphy data and collect the logs weekly, to monitor compliance. If participants are unable to consume a meal or snack as provided, they will send a picture of their meal or snack using an electronic device, including a reference object, i.e., a card of known dimensions provided by the investigators to orient the staff to the portion size. This template-based approach has been used to develop more sophisticated mobile applications for food intake assessment. All uneaten food will be saved and returned to the metabolic kitchen when staff delivers new food. If it is not possible to save leftover food, participants will take a picture of the remaining food including the reference object. Kitchen staff will pre-weigh all provided items and post-weigh any non-eaten items and compute macronutrient and caloric counts for participants daily intake using the Nutrition Data System for Research (NDSR). [Note: participants will be provided a master meal and snack menu from which they can pick foods that they find acceptable. If participants do not like certain foods, they can alter their selections. Regular contact with participants due to the scheduled food deliveries and daily queries will facilitate these requests. We plan to offset the high study burden by enrolling participants in close proximity to the CTRC, providing them with all meals and snacks for a total of 4 mo at an estimated value of $1000, and compensating them $300 for each of 4 CTRC assessments, with a $300 bonus at study completion ($1500 total, paid by check). After the first condition (2 mo), participants will complete assessment 2. They will eat according to their usual (baseline) dietary pattern for two weeks, which serves as a wash-out period from the first assigned eating condition. Participants will then complete assessment 3, immediately followed by completion of the second eating condition, followed by assessment 4. All assessments follow the same protocol. Following completion of the fourth assessment, participants will complete a brief survey regarding their perceived adherance to study protocol and explain what they would have changed to make the study easier to adhere to. Appendix A shows the study timeline. Appendix B shows the text/email questions we will use to assess adherence each day. Appendix C shows a sample menu that will be used for participants to identify their food preferences.

The following documents are currently attached to this item:

Procedures (appendixastudytimeline4.14.14.docx)

Procedures (appendix-dailytextquestionsforadherence.docx)

Procedures (appendixcsamplemenu.doc)

Procedures (exitsurveys-draft_6.30.16.docx)

Deception
Does your project use deception?
No

Analysis Plan
All continuous variables will be analyzed using linear mixed-effects model analysis allowing for assessment of the eating condition effect on each continuous outcome of interest while controlling for effects of other covariates such as period, sequence, and a random subject effect nested within sequence. Separate models will be generated for each of the outcome measures, with each outcome measure regressed on eating condition assignment, along with baseline outcome and any other covariates deemed prognostic in preliminary analyses, including adherence measures such as sleep and eating timing, and exercise. The linear mixed-effects models will incorporate adjustments for any period effect and include dropout data. The model will include subject-specific intercepts as random effects, and assumes independent and identically distributed random errors within subject. Analysis of the circadian amplitude and phase of hormonal data will use linear mixed effects cosinor analysis, which accounts for systematic inter-individual differences. Changes in circadian phase and amplitude by condition will be compared with 2-sided t-tests. Mixed-effects models will be analyzed using the SAS PROC MIXED procedure (version 9.3, SAS Institute, Cary, NC). Study coordinators will attempt to minimize missing data. Yet, we anticipate an 80% completion rate (n=16), so intent-to-treat principles will be used. As there are limited data for similar studies, the drop-out rate is based on weight loss studies at UPenn and on a Mediterranean diet study in which retention at 6 mo was 80%.The PROC MIXED procedure allows use of all available data for participants.

The following documents are currently attached to this item:

There are no documents attached for this item.

Are you conducting research outside of the United States?
No

Data confidentiality

- x **Paper-based records will be kept in a secure location and only be accessible to personnel involved in the study.**
- x **Computer-based files will only be made available to personnel involved in the study through the use of access privileges and passwords.**
- x **Prior to access to any study-related information, personnel will be required to sign statements agreeing to protect the security and confidentiality of identifiable information.**
- x **Wherever feasible, identifiers will be removed from study-related information.**

A Certificate of Confidentiality will be obtained, because the research could place the subject at risk of criminal or civil liability or cause damage to the subject's financial standing, employability, or liability.

A waiver of documentation of consent is being requested, because the only link between the subject and the study would be the consent document and the primary risk is a breach of confidentiality. (This is not an option for FDA-regulated research.)

Precautions are in place to ensure the data is secure by using passwords and encryption, because the research involves web-based surveys.

Audio and/or video recordings will be transcribed and then destroyed to eliminate audible identification of subjects.

Subject Confidentiality
Confidentiality will be protected by having all participant-related materials locked in a filing cabinet in a locked office. Electronic databases will identify participants only by participant number. No participant will be referred by name in any communication or publication, and medical information will be released to other health care professionals only with the appropriate release information.

Sensitive Research Information*
Does this research involve collection of sensitive information about the subjects that should be excluded from the electronic medical record?
No

Subject Privacy
Privacy refers to the person's desire to control access of others to themselves. Privacy concerns people, whereas confidentiality concerns data. Describe the strategies to protect privacy giving consideration to the following: The degree to which privacy can be expected in the proposed research and the safeguards that will be put into place to respect those boundaries. The methods used to identify and contact potential participants. The settings in which an individual will be interacting with an investigator. The privacy guidelines developed by relevant professions, professional associations and scholarly disciplines (e.g., psychiatry, genetic counseling, oral history, anthropology, psychology).
Study personnel will follow strict guidelines to ensure participant privacy during clinic visits. All study procedures will be conducted in an exam room with the door closed. No private information will be discussed in a public area such as the waiting room, hallway, or laboratory.

Data Disclosure
Will the data be disclosed to anyone who is not listed under Personnel?
Not applicable.

*Data Protection**

- x **Name**
- x **Street address, city, county, precinct, zip code, and equivalent geocodes**
- x **All elements of dates (except year) for dates directly related to an individual and all ages over 89**
- x **Telephone and fax number**
- x **Electronic mail addresses**
- x **Social security numbers**
- x **Medical record numbers**
- **Health plan ID numbers**
- **Account numbers**
- **Certificate/license numbers**
- **Vehicle identifiers and serial numbers, including license plate numbers**
- **Device identifiers/serial numbers**
- **Web addresses (URLs)**
- **Internet IP addresses**
- **Biometric identifiers, incl. finger and voice prints**
- **Full face photographic images and any comparable images**
- **Any other unique identifying number, characteristic, or code**
- **None**

Does your research request both a waiver of HIPAA authorization for collection of patient information and involve providing Protected Health Information ("PHI") that is classified as a "limited data set" (city/town/state/zip code, dates except year, ages less than 90 or aggregate report for over 90) to a recipient outside of the University of Pennsylvania covered entity?
No

Tissue Specimens Obtained as Part of Research*
Are Tissue Specimens being obtained for research?
Yes

Tissue Specimens - Collected during regular care*
Will tissue specimens be collected during regulator clinical care (for treatment or diagnosis)?
No

Tissue Specimens - otherwise discarded*
Would specimens otherwise be discarded?
Yes

Tissue Specimens - publicly available*
Will tissue specimens be publicly available?
No

Tissue Specimens - Collected as part of research protocol*
Will tissue specimens be collected as part of the research protocol?
Yes

Tissue Specimens - Banking of blood, tissue etc. for future use*
Does research involve banking of blood, tissue, etc. for future use?
No

Genetic testing
If genetic testing is involved, describe the nature of the tests, including if the testing is predicative or exploratory in nature. If predictive, please describe plan for disclosing results to subjects and provision of genetic counseling. Describe how subject confidentiality will be protected Note: If no genetic testing is to be obtained, write: "Not applicable."
Not applicable

Consent

1. Consent Process

Overview
Following the screening telephone call, trained clinical assessors will meet in person with all potential participants to describe the study, its requirements, and its likely risks and benefits. Participants will be provided a written copy of the Consent Form/HIPAA at this meeting and will be given an opportunity to read it and have all of their questions answered. Persons who wish to participate in the study will be asked to give their written consent and will then continue with the screening visit. Participants will be told that they can contact the Principal Investigator at any time if they have questions about the study. With the addition of this modification, all active participants will be re-consented with the updated informed consent form. Previously completed subjects before the addition of the survey, do not require a revised written consent because of the lack of new risk on subjects as a result of this modification. However, verbal consent will be obtained of those completed subjects who are willing to complete the questionnaire verbally.

Children and Adolescents
Not applicable.

Adult Subjects Not Competent to Give Consent
Not applicable. All participants need to be competent to provide informed consent.

2. Waiver of Consent

Waiver or Alteration of Informed Consent*
Waiver of written documentation of informed consent: the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context

Minimal Risk*

Impact on Subject Rights and Welfare*

Waiver Essential to Research*

Additional Information to Subjects

Written Statement of Research*
No

If no written statement will be provided, please provide justificiation

Due to the addition of a brief survey expected to be completed of the participants: All new and active participants will complete an in-person informed consent form that reflects the addition of the survey. All completed subjects do not require a revised written consent because of the lack of new risk on subjects as a result of this modification. Verbal consent will be obtained of those completed subjects willing to complete the questionnaire verbally. See attached script.

The following documents are currently attached to this item:

Written Statement of Research (phonescript.docx)

Risk / Benefit

Potential Study Risks
The risk to participants in this trial have been carefully considered and minimized to the extent possible. Every effort has been made to provide a study in which the safety of the research participants is protected. During this study participants will be asked personal questions such as their weight, age, eating habits, and mood. During the outpatient phase participants will experience the inconvenience of wearing actigraphs and keeping journals of their food intake, sleep, mood, and physical activity, all of which pose minimal risk. The interviews and paper-and-pencil assessments present little risk to participants beyond those experienced in daily life. Blood draws. During the inpatient assessments, participants will experience the discomfort of the initial venapuncture and blood withdrawal system and the possibility of small bruises at the site of the needle, dizziness, or fainting shortly after having blood drawn. Local clots may form, and infections may occur, but these are rare. DEXA. This research study involves exposure to radiation from the DEXA scans and therefore participants will receive a radiation dose. The radiation exposure from a whole body DEXA scan is 0.04 mrem which is equivalent to the exposure from a lateral chest X-ray. At doses much higher than participants will receive, radiation is known to increase the risk of developing cancer after many years. At the doses participants will receive, it is very likely that they will see no effects at all. Metabolic Testing. The study involves restraining participants from eating for a period of at least 10 hours (overnight), which may be uncomfortable. If unforeseen risks are seen, they will be reported to the Office of Research Integrity and Compliance. If any events occur that might be related to the study, the participant will be instructed to bring them to the attention of their personal physician, as well as study staff.

Potential Study Benefits
There may be no direct benefit to subjects as a result of participation in the study. Participants may increase their knowledge of their eating and sleeping behaviors. Participation will contribute important data for the field of weight management, which may benefit persons more broadly.

Alternatives to Participation (optional)
The only alternative to participation is to choose not to participate in this study.

Data and Safety Monitoring
Safety and tolerability will be assessed throughout the study by examination of adverse events, questionnaires, and clinical laboratory measures. All safety information will be collected and processed promptly, to comply with regulatory requirements designed to protect study participants. University guidelines regarding the reporting of adverse events will be followed as documented in the detailed study protocol. The investigators, study coordinators, and research assistants will monitor this study. Adverse events will be reported to the IRB at regular intervals. Protections Against Risk (from the Human Subjects section of the R21 application): i. Compliance statement. This study will be conducted in full accordance of all applicable University of Pennsylvania Research Policies and Procedures and all applicable Federal and State laws and regulations including 45 CFR 46, 21 CFR Parts 50, 54, 56, 312,

314, and 812, and the Good Clinical Practice: Consolidated Guideline approved by the International Conference on Harmonisation (ICH). Any episode of noncompliance will be documented. The investigators will perform the study in accordance with this protocol, will obtain consent and assent, and will report all study related adverse events, unanticipated problems, and deviations from the protocol in accordance with University of Pennsylvania-Childrens Hospital of Philadelphia-Center IRB Policies and Procedures and all federal requirements. Collection, recording, and reporting of data will be accurate and will ensure the privacy, health, and welfare of research participants during and after the study. ii. General conduct of research. Experienced staff will collect all blood samples, DEXA data, and indirect calorimetry data. Experienced personnel will administer the questionnaires and collect all other data related to disordered eating, sleep, mood, and adherence to the study procedures, including the daily text/e-mail queries. iii. Medical monitoring. Patients will be monitored by study staff. Medical personnel, Dr. Ahima and the CTRC research nursing staff, will be charged with approving participants at study baseline and will be consulted in the case of any medical issues that arise during the study. Adverse events will be documented on template forms from the Office of Human Research indicating the nature of the event, the likelihood that it was study related, and if it were an expected or unexpected event. Adverse events will be summarized and documented in the yearly continuing review report to the IRB. Serious adverse events that occur will be reported to the IRB within 24 hours. The initial report will be followed up by a full written report that includes an assessment of the likelihood that the event was study related. These events will be reviewed in real time by the PIs, and reported to the IRB in the annual report or more frequently, as needed. iv. Confidentiality. Every effort will be made to maintain participant confidentiality. Private health information will be collected, accessed, and stored according to HIPAA guidelines. Data on subjects will be kept in locked filing cabinets to ensure confidentiality. Blood specimens will be coded in research storage freezers. Code numbers will be assigned to patients for data entry purposes, and the data will be kept on a password-protected server hosted at the Center for Weight and Eating Disorders. 6.3. Potential Benefits of the Proposed Research to Human Subjects and Others We cannot ensure a direct benefit to the subjects as result of participating in this study. However, the study has potential benefits. First, participants may gain more insight into their eating and sleep patterns through the study assessments. Second, they may discover that one of the patterns of eating has beneficial effects on their weight. Thus, the risks to subjects are reasonable considering the benefits to subjects and to others. If new information becomes available, indicating that the risk profile has changed, all participants will be notified. If this occurs, the investigators will re-consider the risk-benefit ratio for the trial and make appropriate decisions regarding its continuation. 6.4. Importance of the Knowledge to Be Gained The most important new knowledge to be gained from this study, if successful, is that eating according to a certain schedule, either daytime or delayed, may have effects on ones weight and metabolism that could be beneficial for weight gain prevention, and/or weight loss efforts. Such an intervention strategy could be widely distributed to help promote weight management and prevention or management of weight-related comorbidities. Thus, the risks to subjects are reasonable considering the importance of the knowledge that reasonably may be expected to result from this study. 6.5. Data and Safety Monitoring Plan General Description. We will provide the following safety and monitoring procedures, in accordance with the policy of the NIH that all investigative sites provide a plan regarding monitoring and oversight of the conduct of the clinical trial to ensure the safety of participants and the validity and integrity of the data. Data and safety monitoring will be performed in accordance with all local IRB, NIH, and other applicable federal regulatory guidelines. Research and treatment procedures will also be conducted in accordance with the Principles of Good Clinical Practice (GCP) guidelines. Standard University of Pennsylvania procedures and infrastructure for data and safety monitoring will be utilized. These procedures are described below. a. Who will be responsible for monitoring? The Principal Investigator, Dr. Allison, and Co-Investigators, Drs. Ahima and Goel, in conjunction with the study coordinator, will be responsible for overseeing and completing the monitoring process. Participants will have 24-hr access to emergency medical personnel through emergency services at Penn Medicine. b. How will monitoring be performed? All protocols and consent forms belonging to this project will be fully approved by the IRB before they are implemented. During the course of the study, safety and data quality monitoring will be performed on an ongoing basis by the research coordinator and study investigators. The research coordinator is responsible for collecting and recording all clinical data. This includes ensuring that all source documents exist for the data on the case report forms, ensuring all fields are completed appropriately, and all corrections are entered according to Good Clinical Practice (GCP) guidelines. Any inconsistencies/deviations will be documented. c. Study initiation. Dr. Allison will be responsible for assuring that all staff and participants understand and accept: the obligations incurred in undertaking this study; the obligation to obtain informed consent; the obligation to obtain IRB review and approval of a clinical investigation before the investigation may be initiated and to ensure continuing review of

the study by the IRB; and the obligation to keep the sponsor informed of such IRB approval and subsequent IRB actions concerning the study. d. Ongoing monitoring meetings. Monitoring will be conducted in accordance with the University of Pennsylvania Sponsor-Investigator Standard Operating Procedure. Enrollment will be complete when 30 participants meeting the inclusion/exclusion criteria have been screened, participated in informed consent, and 20 have been randomized to the order of their eating conditions. Monitoring meetings will be held regularly throughout the study. The first meeting will occur no more than two weeks after the first participant is enrolled. Subsequent monitoring will occur at weekly study meetings of study investigators and staff. Specific items to be reviewed at these meeting include: 1. Accrual and retention 2. Protocol compliance 3. Adverse or unexpected events 4. Other participant issues 5. Regulatory issues The research coordinator will file all meeting agendas and reports in the study regulatory binder that will be reviewed regularly by the University of Pennsylvanias Office of Human Research. e. Assessing adverse events. Monitoring for Adverse Events (AE) will be conducted in real-time by all study personnel who have direct contact with participants. Drs. Allison, Ahima, and Goel will determine the severity of the adverse events related to study participation, as well as the appropriate course of action for the study participant. Participants will also be instructed to contact the study physician should they experience any adverse events between study visits. After removing identifying patient health information, any serious unexpected or adverse events will be reported to the University of Pennsylvania Institutional Review Board within 72 hours. Serious adverse events (e.g., hospitalization) will be brought to the attention of the Investigators and study physician within 24 hours and to the attention of the IRB and NIH within 72 hrs, as required. All adverse and unexpected events will be recorded, and a summary table will be reviewed by the IRB annually. f. Data, safety and monitoring report. The PIs will provide a summary of the data safety and monitoring (DSM) report to NIH on an annual basis, as part of the progress report. The DSM report will include the participants, sociodemographic characteristics, expected versus actual recruitment rates, retention rates, any quality assurance or regulatory issues that occurred during the past year, summaries of AEs and SAEs, and any actions or changes with respect to the protocol. The DSM report to NIH will also include, if applicable, the results of any hypothesis-testing data analysis conducted. g. Regulatory Approval. We will obtain regulatory approval through the University of Pennsylvanias biomedical IRB before initiating the trial. h. Evidence of training in human subject research. All research personnel associated with this study will have completed the University of Pennsylvanias Collaborative Institutional Training Initiative (CITI) for patient-oriented research, as well as HIPAA Compliance Training. Documentation of this training will be retained in the study regulatory binder.

The following documents are currently attached to this item:

There are no documents attached for this item.

Risk / Benefit Assessment
Minimal risk.

General Attachments

The following documents are currently attached to this item:

Cover Letter (7.19.16modificationcoverletter.docx)

Cover Letter (4.28.16modificationcoverletter.docx)

Informed consent form (icfdaytimevsdelayedeating100314.doc)

Cover Letter (01.20.16modificationcoverletter.docx)

Cover Letter (3.6.15modificationcoverletter.docx)

Recruitment materials (metroad.pdf)

Cover Letter (irbcoverletterdelayedeating10.03.14.docx)

Recruitment materials (delayedeatingflyer.pdf)

Informed consent form (icfdelayedeating08.08.14_tracked.doc)

Informed consent form (icfdelayedeating08.08.14.doc)

Questionnaires (phonescreen080714.doc)

Recruitment materials (delayedeatingad8.8.14.docx)

Grant Application (r21finalsubmission-science.docx)

Cover Letter (irbcoverletterdelayedeating8.21.14.docx)

Cover Letter (irbcoverletterdelayedeating10.15.14.docx)

Cover Letter (irbcoverletterdelayedeating11.14.14.docx)

Cover Letter (irbcoverletterdelayedeating2.9.15.docx)

Cover Letter (irbcoverletterdelayedeating10.07.14.docx)

Cover Letter (3.24.15modificationcoverletter.docx)

Cover Letter (8.26.15modificationcoverletter.docx)

Informed consent form (icfdaytimevsdelayedeating032415-tracked.doc)

Informed consent form (icfdaytimevsdelayedeating032415-clean.doc)

Questionnaires (phonescreen08.26.15.doc)

Recruitment materials (08.26.15campusflyer-final.pdf)

Informed consent form (icfdayvdelayedeating04.06.16-clean.doc)

Informed consent form (icfdayvdelayedeating04.06.16-tracked.doc)

Cover Letter (4.5.16modificationcoverletter.docx)

Cover Letter (5.16.16modificationcoverletter.docx)

Questionnaires (dequalitativeaddition-daytime.docx)

Questionnaires (dequalitativeaddition-delayed.docx)

Cover Letter (cl_additionoffollow-upquestionnaire.docx)

Informed consent form (updatedconsent-clean_8.19.16-icfdayvdelayedeating-1.doc)

Informed consent form (updatedconsent-tracked_8.9.16-icfdayvdelayedeating-1.doc)

Questionnaires (exitsurveys-draft_6.30.16.docx)