Metabolic Impact of Intermittent CPAP

Consent Form

Johns Hopkins IRB # NA_00086830

Document Date: 08/02/2021

NCT02824263

If appropriate for this study, a scanned copy of the signed consent form should be uploaded to the participant's Epic/EMR record.

Patient I.D. plate

RESEARCH PARTICIPANT INFORMED CONSENT AND PRIVACY AUTHORIZATION FORM

Protocol Title: **Metabolic Impact of Intermittent CPAP**

Application No.: **NA_00086830**

Sponsor: **Johns Hopkins University**

Supporter: **National Institutes of Health**

Principal Investigator: **Jonathan Jun, MD**
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Baltimore, MD 21224
Phone: 410-550-0115
Fax: 410-550-2612

1. What you should know about this study:

- You are being asked to join a research study. This consent form explains the research study and your part in it. Please read it carefully and take as much time as you need. Ask your study doctor or the study team to explain any words or information that you do not understand.
- You are a volunteer. If you join the study, you can change your mind later. There will be no penalty or loss of benefits if you decide to quit the study.
- During the study, we will tell you if we learn any new information that might affect whether you wish to continue to participate.
- If we think your participation in this study may affect your clinical care, information about your study participation will be included in your medical record, which is used throughout Johns Hopkins. Doctors outside of Johns Hopkins may not have access to this information. You can ask the research team to send this information to any of your doctors.
- When Johns Hopkins is used in this consent form, it includes The Johns Hopkins University, The Johns Hopkins Hospital, Johns Hopkins Bayview Medical Center, Howard County General Hospital, Johns Hopkins Community Physicians, Suburban Hospital, Sibley Memorial Hospital and All Children's Hospital.
- Biospecimens will be collected in this study. Biospecimens may include any of the following: blood, tissue, saliva, urine, bone marrow, cells, etc. Most biospecimens contain DNA, which is the genetic code for each person.

2. Why is this research being done?

This research is being done to test how obstructive sleep apnea (OSA) affects your metabolism at night. OSA causes collapse of tissues in the back of the throat during sleep.

People with OSA may have increased risks of high blood pressure, heart attack, stroke, and diabetes, but doctors do not understand why OSA might lead to these problems. We suspect that the stress caused by OSA causes too much fat to be released into the blood. These fats in the blood are called free fatty acids (FFA), and they can affect your blood flow and your ability to use sugar in your diet. In this study, we will test this hypothesis by measuring your blood levels of FFA, glucose, and other metabolites during the night when you wear CPAP, or when you do not wear CPAP. We are looking for participants who have OSA and are used to wearing CPAP, who are willing to stop a few days and switch to nasal dilator strips (NDS). NDS are adhesive strips applied to the nose that can reduce nasal congestion and snoring, but long-term data have not shown an effect on OSA severity. We will compare your metabolism on different nights when you are wearing CPAP or NDS.

As an optional part of this study, we will isolate DNA from your blood to check if sleep apnea influences your genes, or to see how your genes affect other results.

People with OSA, who are 20-75 years old, used to wearing CPAP and are willing to stop for a few days and switch to nasal dilator strips (NDS) may join. Also, volunteers should not have diabetes that requires insulin treatment, or other medical problems that we will look for on a questionnaire.

How many people will be in this study?
We are looking for 92 people to enroll in the study, and 78 people to complete this study.

3. What will happen if you join this study?

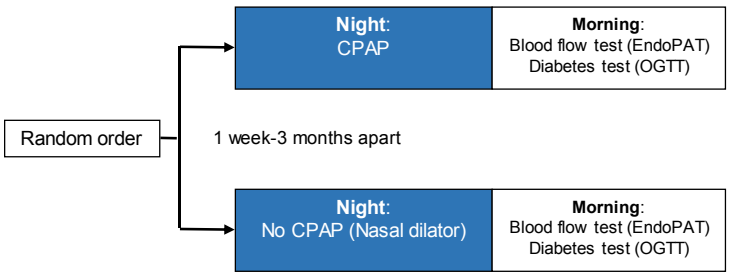
If you agree to be in this study, we will ask you to do the following things:

- You will have a brief history and physical exam with one of the study doctors. We will measure your height, weight, and neck width. You will be asked to complete a questionnaire about your health. You will also have your blood count checked to make sure it is safe for you to have blood samples taken. If you are a woman who is able to become pregnant, you will have a urine pregnancy test. The hemoglobin level needs to be at least 10 g/dL and the result of the pregnancy test must be negative for you to take part in the study.

- If the above steps are completed, then you will be scheduled for two sleep studies in the sleep laboratory. One sleep study is performed wearing your CPAP. Another sleep study is performed wearing a NDS on your nose instead of CPAP. You will be asked to use the NDS 2 nights instead of CPAP before coming in (this is to increase the chances of showing sleep apnea during the test). You will be told which order the studies will be done. The studies will be scheduled 1 week to 3 months apart.

- Before each of your visits we will ask you screening questions for possible Covid-19 infection (fever, headaches, sore throat, diarrhea, loss of smell/taste, sick contacts). In addition, before each of your sleep studies, we will ask you to have a Covid-19 screening test (such as a nasal swab) performed. This testing requirement may change depending on the level of Covid-19 in the community and Johns Hopkins policies.

  For each sleep study, you will be provided with a standard dinner in the evening. Then, 2 IVs will be placed in your arm – one to sample blood and the other as a backup so we do not have to replace the first IV in the middle of the night if it stops working.



At about 9-10 PM we will set you up for an overnight sleep study. You will not be given drugs to help you sleep, and we prefer that you not take any drugs affecting sleep for at least seven days before coming for the test. You should not have alcohol or caffeine 24 hours before your sleep study. We will apply several sensors to your scalp, face and ears to monitor your sleep, and other sensors to your chest, abdomen, and legs to monitor your breathing and movements.

- During the CPAP night, a CPAP machine and mask is provided by the research lab. You may bring your own CPAP mask to sleep with if you wish. If necessary, the technician will adjust your CPAP pressure during the night to make sure you are receiving the correct level of CPAP pressure. Lights are turned out and sleep recording will begin at 10:30 p.m. A nurse will take blood samples from your IV, about once every 30 minutes, starting before you go to bed continuing while you are asleep. A total of 27 blood samples will be taken during the night for a total of about 14 tablespoons of blood. This is less than half the amount of blood drawn during a blood donation.

- During the non-CPAP (NDS) night, you will wear the usual equipment that we use to measure sleep and breathing patterns. Before this night is scheduled you will be asked to stop using CPAP for 1-2 nights before coming in for this study. A nurse will take blood samples from your IV, about once every 20 minutes, starting before you go to bed and continuing while you are asleep. A total of 27 blood samples will be taken during the night for a total of about 14 tablespoons of blood. This is less than half the volume of blood given in a routine donation.

  For both sleep studies, we will wake you up at 6:30 AM. We will collect a urine sample after you wake up. We will also perform a forearm blood flow test called EndoPAT. To do this test, you will wear a small finger cuff and a standard arm blood pressure cuff. The arm blood pressure cuff is inflated for 5 minutes which temporarily decreases blood flow to your hand. Then the cuff is released, and we measure how quickly blood flow returns to your finger.

- We will do a diabetes test called an oral glucose tolerance test (OGTT). This tests how your body reacts to a getting a lot of sugar all at once. You will get a sugary drink containing 75 g of glucose. A small amount of blood is then drawn from your IV every 30 minutes for 2 hours.

- We will perform a DEXA scan on one of the visits. It measures your bone density and body fat content. A DEXA scan is similar to an X-ray, but uses much less radiation than a normal chest X-ray (about 10%).

- After the OGTT is finished, breakfast will be provided. Since you may not sleep as restfully as usual (especially during non-CPAP tests), you should make arrangements for transportation so that you do not have to drive. If this is not possible, then you will be provided up to 4 hours of extra time to sleep before being discharged from the research facility.

Request to collect and store biospecimens for future research

As part of this research study, we would like to ask you to let us store your biospecimens and health information for future research related to sleep and metabolism.

The study doctor can provide you with additional information if you have questions. Also, further information about our use of your biospecimens can be found in this consent document under the heading *What happens to Data and Biospecimens that are collected in the study?*

Will you allow us to store the biospecimens we collect for this study for use in future research?

YES ☐ _____
Signature of Participant

NO ☐ _____
Signature of Participant

Optional: Request for storage and analysis of genetic material

You are being asked for permission to store and analyze DNA in your blood. DNA is the substance that carries genetic (inherited) information. DNA can be turned on or off by modifying its structure through multiple ways, including methylation. We will analyze blood samples you provide as part of this study to examine if sleep apnea affects your DNA sequence or structure.

If you agree, we will purify DNA from the blood samples that you provide (16cc) as part of this study and store the samples in a secure space at Johns Hopkins University, Asthma and Allergy Building, 5th floor, 5501 Hopkins Bayview Circle, Baltimore, MD 21224. Your sample will be de-identified so that it cannot be linked to your personal information. When your DNA is purified, a special number, that is different from your study ID, will be assigned to your DNA material. We will maintain a separate "key" that links your study number to your DNA sample. This "key" will be stored on an encrypted server, and access to this server will be limited to only certain members of the study team. Your sample will be stored for up to 15 years for the purpose described in this consent form, unless you withdraw your consent. After 15 years, your sample will be destroyed.

The Genetic Information Nondiscrimination Act (GINA) may help protect you from health insurance or health-related employment discrimination based on genetic information. The law provides that health insurance companies and group heal plans

- may not ask for genetic information from this research and
- may not use genetic information when masking decisions about eligibility or premiums.

This law will not stop insurance companies from using genetic information to decide whether to pay claims. This law does not apply to other types of insurance (such as life or disability insurance). Despite the GINA protections and the best efforts of the research team to protect your information, you may still be at risk if information about you were to become known to people outside of this study.

Genetic analysis is not necessary for your participation in the study and you can opt out.

Do you give us permission to store and analyze your genetic material?

YES ☐ _____ _____
Signature of Participant Date

NO ☐ _____ _____
Signature of Participant Date

How long will you be in the study?
You will be in this study for up to 2 nights followed by the morning tests.

Permission to be contacted for future research
We would like to ask for your permission to contact you about future research related to sleep apnea. Will you allow us to contact you for additional research studies related to this study?

YES ☐ _____
Signature of Participant

NO ☐ _____
Signature of Participant

4. What are the risks or discomforts of the study?

Nasal dilator strips (NDS): These are adhesive stickers that are applied to the nose that widen the nasal passages. NDS do not work as well as CPAP for sleep apnea, so you may have less refreshing sleep any time you use NDS instead of CPAP, including at home before your lab visits. Your sleep quality on NDS nights at home, and in the lab may be less refreshing than when using CPAP. During off-CPAP nights, you may experience symptoms such as awakenings from sleep, or a morning headache. During the daytime, you may be sleepier than usual. Severe sleepiness from sleep apnea could increase your risks of a car accident or other injury. You should not join this study if you have ever been in a car accident or near-miss related to sleepiness, or if sleepiness on the job would place you and others at risk for injury (if you are a pilot, commercial driver, etc). There may be mild skin irritation when pulling off NDS. We advise you to arrange transportation when not using CPAP, so that you do not have to drive. If you must drive, then we ask you to increase your sleep time, to minimize sleep deprivation off CPAP. On the day of the non-CPAP sleep study, if you plan to drive home yourself, you will be provided with up to four additional hours of time in the lab to sleep before discharge.

Covid testing: Before your sleep studies we will ask you to pass a Covid-19 screening test in the 3 days before your visit. This is usually performed by swabbing the back of the nose or throat with a small "Q-tip". You may need to commute to testing center to have this done. Getting the sample can cause some pain or discomfort. If you test positive, you will not be able to continue in the study and follow guidelines about self-quarantine, after which you may be eligible to return to the study.

Sleep in the laboratory may be less restful than at home. Since you will sleep in an unfamiliar setting with monitoring equipment, your sleep might be affected. Poor sleep could increase your risks of a car accident or other injury.

Blood tests: Taking blood may cause discomfort, bleeding or bruising where the needle enters the body. In rare cases, it may result in fainting. There is a small risk of infection. The total amount of blood across 3 visits we are taking is less than the amount of blood collected during blood donation. You may feel fatigue, weakness, headache, cold hands and feet after blood draws.

Blood flow test: We are using a device called EndoPAT which is a non-invasive system for measuring blood flow. During the test, you are seated in a chair and a blood pressure cuff is inflated for 5 minutes over your arm. You may feel slight discomfort in the hand and arm (similar to the way it feels when a doctor checks your blood pressure), but this feeling goes away when the test is completed.

Questionnaires: A risk of filling out questionnaires is the possible loss of confidentiality. You may get tired or bored when we are asking you questions or you are completing questionnaires. You do not have to answer any questions you do not want to answer.

DEXA Scan: This research study includes exposure to radiation from x-rays or gamma rays. This radiation exposure is for research purposes only and is not part of your medical care. X-rays and gamma rays can damage cells, but at low doses, the body is usually able to repair these cells.

The radiation exposure that you will get in this research study is 0.001 rem (a rem is a unit of absorbed radiation). This is less than the 0.3 rem that the average person in the United States gets each year from natural sources like the sun, outer space, air, food, and soil. The risk from the radiation exposure in this research study is very small.

The radiation exposure described here is what you will get from this research study only. It does not include any exposure you may have received or will receive from other medical tests outside of this study that are a part of your medical care. Radiation risk builds up with each exposure. You should think about your own history of radiation exposure from tests (like x-rays or CT scans) in deciding about the radiation in this study. If you have questions about the total amount of radiation you will be receiving, you should ask your doctor.

5. Are there risks related to pregnancy?

This research may hurt an embryo or fetus in ways we do not currently know. **Pregnant women or nursing mothers may not participate**. If you are a woman who is able to become pregnant, you will have a urine pregnancy test. The result of this test must be negative for you to take part in the study. If you suspect that you have become pregnant while participating in the study, you are to contact the study doctor immediately.

6. Are there benefits to being in the study?

There is no direct benefit to you from being in this study. If you take part in this study you will help us learn about OSA and its effects of metabolism, which may help others in the future.

7. What are your options if you do not want to be in the study?

You do not have to join this study. If you do not join, your care at Johns Hopkins will not be affected.

8. Will it cost you anything to be in this study?

You will receive a separate Insurance and Research Participant Financial Responsibility Information Sheet (Sheet). This Sheet will give you the following information:

- The procedures, tests, drugs or devices that are part of this research and that will be paid for by the study (no cost to you).
- The procedures, tests, drugs or devices that will be billed to you and/or your health insurer. If you have health insurance, you will be responsible for any co-pays or deductibles not covered by your insurance.

9. Will you be paid if you join this study?

You will be paid up to $600 for completing all parts of this study, based on the following procedures:

- $200 for each sleep study (2 nights)
- $25 for each oral glucose tolerance test and EndoPAT test (done the morning after each visit)
- $50 for a DEXA scan (done once)
- $100 study completion bonus if you come on time to your appointments, and do not make any changes to your scheduled visits.

Therefore, if you come to both visits without schedule changes, the total possible payment is $600.

If you are asked to return for any additional sleep studies (in cases where the data is insufficient), you will be paid an additional $200 for each additional night. You will receive parking reimbursement, dinner before each visit, and breakfast after each visit.

You may be required to provide your social security number to be paid for taking part in this study. Federal tax law requires that you report your research payments when you file your taxes. If your total payments from Johns Hopkins exceed $600 per year, Johns Hopkins will report these payments to the Internal Revenue Service and you will receive a 1099-MISC form from us.

10. Can you leave the study early?

- You can agree to be in the study now and change your mind later.
- If you wish to stop, please tell us right away.
- Leaving this study early will not stop you from getting regular medical care.

If you leave the study early, Johns Hopkins may use or give out your health information that it has already collected if the information is needed for this study or any follow-up activities.

11. Why might we take you out of the study early?

You may be taken out of the study if:

- Staying in the study would be harmful.
- You need treatment not allowed in the study.
- You fail to follow instructions.
- You become pregnant.
- The study is cancelled.
- There may be other reasons to take you out of the study that we do not know at this time.

If you are taken out of the study early, Johns Hopkins may use or give out your health information that it has already collected if the information is needed for this study or any follow-up activities.

12. How will your privacy be protected?

We have rules to protect information about you. Federal and state laws and the federal medical Privacy Rule also protect your privacy. By signing this form you provide your permission, called your "authorization," for the use and disclosure of information protected by the Privacy Rule.

The research team working on the study will collect information about you. This includes things learned from the procedures described in this consent form. They may also collect other information including your name, address, date of birth, and information from your medical records (which may include information about HIV status, drug, alcohol or STD treatment, genetic test results, or mental health treatment).

The research team who may be a part of Johns Hopkins Health System, Johns Hopkins University or the Johns Hopkins Applied Physics Laboratory will know your identity and that you are in the research study. Other people at Johns Hopkins, including your doctors, may also see or give out your information. We make this information available to your doctors for your safety.

People outside of Johns Hopkins may need to see or receive your information for this study. Examples include government agencies (such as the Food and Drug Administration), safety monitors, other sites in the study and companies that sponsor the study.

If you are in a cancer study that receives federal funding, the National Cancer Institute (NCI) now requires that we report identifiable information (such as, zip code) about your participation. You may contact the NCI if you have questions about how this information is used.

We cannot do this study without your authorization to use and give out your information. You do not have to give us this authorization. If you do not, then you may not join this study.

We will use and disclose your information only as described in this form and in our Notice of Privacy Practices; however, people outside Johns Hopkins who receive your information may not be covered by this promise or by the federal Privacy Rule. We try to make sure that everyone who needs to see your information keeps it confidential–but we cannot guarantee that your information will not be re-disclosed.

The use and disclosure of your information has no time limit. You may revoke (cancel) your permission to use and disclose your information at any time by notifying the Principal Investigator of this study by phone or in writing. If you contact the Principal Investigator by phone, you must follow-up with a written request that includes the study number and your contact information. The Principal Investigator's name, address, phone and fax information are on page one of this consent form.

If you do cancel your authorization to use and disclose your information, your part in this study will end and no further information about you will be collected. Your revocation (cancellation) would not affect information already collected in the study, or information we disclosed before you wrote to the Principal Investigator to cancel your authorization.

13. Will the study require any of your other health care providers to share your health information with the researchers of this study?

As a part of this study, the researchers may ask to see your health care records from your other health care providers. We will limit our requests for health care records to what is needed for our study, or to verify that you are eligible to take part in the study.

14. What if there is a Certificate of Confidentiality for this study?

Your study information is protected by a Certificate of Confidentiality. This Certificate allows us, in some cases, to refuse to give out your information even if requested using legal means.

It does not protect information that we have to report by law, such as child abuse or some infectious diseases. The Certificate does not prevent us from disclosing your information if we learn of possible harm to yourself or others, or if you need medical help.

Disclosures that you consent to in this document are not protected. This includes putting research data in the medical record or sharing research data for this study or future research. Disclosures that you make yourself are also not protected.

15. What treatment costs will be paid if you are injured in this study?

Johns Hopkins and the federal government do not have a program to pay you if you are hurt or have other bad results from being in the study. However, medical care at Johns Hopkins is open to you as it is to all sick or injured people.

The costs for any treatment or hospital care you receive as the result of a study-related injury that are not covered by a health insurer will be billed to you.

By signing this form you will not give up any rights you have to seek compensation for injury.

16. What other things should you know about this research study?

a. What is the Institutional Review Board (IRB) and how does it protect you?

The Johns Hopkins Medicine IRB is made up of:

- Doctors
- Nurses
- Ethicists
- Non-scientists
- and people from the local community.

The IRB reviews human research studies. It protects the rights and welfare of the people taking part in those studies. You may contact the IRB if you have questions about your rights as a participant or if you think you have not been treated fairly. The IRB office number is 410-955-3008. You may also call this number for other questions, concerns or complaints about the research.

When the Johns Hopkins School of Medicine Institutional Review Board (IRB) reviews a study at another site, that site (institution) is solely responsible for the safe conduct of the study and for following the protocol approved by the Johns Hopkins IRB.

b. What do you do if you have questions about the study?
You can reach one of our study coordinators at 410-550-2233. Also, you can call the principal investigator, Dr. Jonathan Jun at 410-550-0115. If you wish, you may contact the principal investigator by letter or by fax. The address and fax number are on page one of this consent form. If you cannot reach the principal investigator or wish to talk to someone else, call the IRB office at 410-955-3008.

c. What should you do if you are injured or ill as a result of being in this study?
If you think you are injured or ill because of this study, call Principal Investigator at 410-550-0115 during regular office hours.

If you have an urgent medical problem related to your taking part in this study, Dr. Jun at 443-838-8029 during regular office hours and 443-838-8029 after hours and on weekends.

d. What happens to Data and Biospecimens that are collected in the study?
Johns Hopkins and our research partners work to understand and cure diseases. The biospecimens and/or data you provide are important to this effort.

If you join this study, you should understand that you will not own your biospecimens or data, and should researchers use them to create a new product or idea, you will not benefit financially.

With appropriate protections for privacy, Johns Hopkins may share your biospecimens and information with our research sponsors and partners.

17. What does your signature on this consent form mean?

Your signature on this form means that: You understand the information given to you in this form, you accept the provisions in the form and you agree to join the study. You will not give up any legal rights by signing this consent form.

WE WILL GIVE YOU A COPY OF THIS SIGNED AND DATED CONSENT FORM

Signature of Participant (Print Name) Date/Time

Signature of Person Obtaining Consent (Print Name) Date/Time

I have received the separate Insurance and Research Participant Financial Responsibility Information Sheet.

Signature of Participant, LAR or Parent/Guardian (Print Name) Date/Time

NOTE: A COPY OF THE SIGNED, DATED CONSENT FORM MUST BE KEPT BY THE PRINCIPAL INVESTIGATOR AND A COPY MUST BE GIVEN TO THE PARTICIPANT. IF APPROPRIATE FOR THIS STUDY, A SCANNED COPY OF THE SIGNED CONSENT FORM SHOULD BE UPLOADED TO THE PARTICIPANT'S EPIC/EMR RECORD (UNLESS NO MEDICAL RECORD EXISTS OR WILL BE CREATED).