Aldosterone and Sodium Regulation in Postural Tachycardia Syndrome Aim 1b: ACTH Stimulation

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Table of Contents:

1.0 Background

1.1 Postural Tachycardia Syndrome (POTS)

POTS is a chronic disorder characterized by greatly increased orthostatic heart rate. It usually affects healthy young people with a 5:1 predilection for females in the reproductive years. The precise incidence of this disorder is not known, but it is estimated that more than one-half million patients are affected in the United States alone.

The patient population in POTS is heterogeneous. Most of them share certain clinical characteristics including headache, fatigue, blurring of vision, dizziness and exercise intolerance, but the hallmark of the disorder is the exaggerated orthostatic tachycardia.

1.2 Pathophysiology of POTS

No definitive cause is found in the great majority of patients with postural tachycardia syndrome. In 30-40% of patients the onset is sudden following a viral-like illness. Diagnosis requires an orthostatic tachycardia (>30 bpm increase in heart rate on standing) and an increase in upright plasma norepinephrine (> 600 pg/ml) in the absence of an underlying secondary cause such as diabetes, debilitating disease or peripheral neuropathy.

Multiple pathophysiological mechanisms may contribute to the orthostatic intolerance in POTS patients. These include a hyperadrenergic state with excessive sympathetic activation, which tends to be associated with migraine-like headache and cold sweaty extremities. A study by Shannon et al.[1] found that some patients have a single point mutation, which produces a poorly functioning norepinephrine reuptake transporter protein that recycles norepinephrine within the intrasynaptic cleft. This process leads to an excessive degree of norepinephrine spillover into the serum in response to a number of sympathetic stimuli, producing a hyperadrenergic state. While this form of POTS is instructive from the standpoint of pathophysiology, it is in fact etiologic in no more than 1% of patients with POTS.

Venous blood pooling due to sympathetic denervation of the veins in the lower extremities has also been implicated, with subsequent excessive gravitational blood pooling and decreased venous return, which is termed partial dysautonomia. In most other patients, we do not yet know the pathophysiology of POTS.

The most striking feature in most postural tachycardia patients is the presence of hypovolemia [2], typically a mean plasma volume deficit of 10-30%, but paradoxically this is accompanied by inappropriately low normal levels of plasma renin activity and low aldosterone secretion in response to upright posture.

1.2.1 The Renin-Angiotensin Aldosterone System:

The renin-angiotensin-aldosterone system (RAS) plays a key role in the regulation of plasma volume. Plasma renin activity and especially aldosterone both are inappropriately low given the remarkably low plasma volume in POTS patients. Indeed, both supine and upright aldosterone levels are subnormal [1].

Angiotensin II is formed by the action of ACE on angiotensin I. Once generated, angiotensin II has numerous sites of action and multiple effects, including a potent vasoconstrictive action. It is normally also a potent stimulus for secretion of aldosterone by the zona glomerulosa acting via AT-1 receptors. Angiotensin II can also promote synthesis and release of norepinephrine from sympathetic nerve terminals, release of adrenomedullary epinephrine, and it has a direct effect on the kidney tubules to reabsorb sodium.

1.2.2 Adrenal response to Angiotensin II

The interaction between the adrenal gland and the renin-angiotensin system (RAS) is crucial for blood volume and electrolyte homeostasis. Angiotensin II plays an important role in the release of aldosterone from the adrenal gland through binding to AT-1 receptors. The increment in aldosterone between supine and upright positions has been used as an estimate of the acute stimulation of the adrenal gland by endogenous angiotensin II in hypertensive patients, it was also reported that aldosterone failed to increase when angiotensin II was infused at the highest rate in hypertensives with abnormal upright posture studies [14].

In humans, small doses of exogenous angiotensin II produce a marked increase in aldosterone. This effect of angiotensin II is exerted by stimulation of both early and late stages of the aldosterone biosynthetic pathway.

1.2.3 Adrenal Aldosterone Response in POTS

We found that patients with postural tachycardia syndrome had a subnormal increment in aldosterone with upright posture [2], which might reflect a blunted adrenal response to stimulation upon assuming upright posture. In this aim, we propose to assess the adrenal response to aldosterone stimulation with IV adrenocorticotropin hormone.

2.0 Rationale and Specific Aims

2.1 Hypothesis

We will test the null hypothesis (H_0) that there is no difference between adrenal tissue responsiveness to infusion of ACTH in patients with POTS compared to healthy control subjects.

2.2 Specific Aims

To assess the adrenal responsiveness to ACTH, as measured by plasma aldosterone level, is contributing to the pathophysiology of POTS.

3.0 Inclusion/Exclusion Criteria

3.1 Inclusion Criteria

- Subjects will be enrolled in the parent study “Dietary Salt in Postural Tachcyardia Syndrome” (R01 HL 102387, IRB# 111261) during the low salt phase
- Postural Tachycardia Syndrome
    - Diagnosed with postural tachycardia syndrome by the Vanderbilt Autonomic Dysfunction Center
        - Increase in heart rate ≥30 beats/min with position change from supine to standing (10 minutes)
        - Chronic symptoms consistent with POTS that are worse when upright and get better with recumbence
- Control Subjects
    - Healthy, non-obese, non-smokers without orthostatic tachycardia
    - Selected to match profiles of POTS patients (gender, age)
    - Not using vasoactive medication
- Age between 18-50 years
- Male and female subjects are eligible.
- Able and willing to provide informed consent

3.2 Exclusion Criteria

- Overt cause for postural tachycardia (such as acute dehydration)
- Inability to give, or withdrawal of, informed consent
- Pregnancy
- Other factors which in the investigator's opinion would prevent the subject from completing the protocol.

4.0 Enrollment/Randomization

4.1 Recruitment

For the parent study, the patients with orthostatic intolerance will be recruited from patients referred to the Vanderbilt University Autonomic Dysfunction Center. Control subjects will be recruited from the Autonomic Research Database, the VICTR Research Participant Database, and advertising within the Vanderbilt Community. For this protocol, subjects enrolled in the parent study will be approached about this sub-study. Subjects will be assured that they are not required to participate in this study even if they choose to participate in the parent study.

4.2 Randomization

There will be no randomization for this specific sub-study. The order of diets (low sodium vs. high sodium) will be performed as a part of the parent study and not as a part of this sub-study. This sub-study will only be performed in the low dietary salt phase.

5.0 Study Procedures

5.1 Screening

All subjects will be previously screened and evaluated as a part of the parent study. No further screening will be performed exclusively for this study. Women of childbearing potential will have had a serum pregnancy test as a part of the parent study. Pregnant women will not be allowed to participate.

5.2 Study Day

- Subjects will already be on the CRC as a part of IRB protocol #111261; this protocol will extend that stay by 1 day
- Protocol will be conducted on the day after Study Day #7 (main study)
- Patient will be seated in chair throughout study; study will be conducted after an overnight fast
- Intravenous (IV) catheter will be put into arm vein (if not already in place)
- Baseline blood draw to be conducted after subject has been seated at least 30 minutes
- Baseline blood draw (t=0 min) for cortisol, aldosterone, and ACTH levels (4 ml)
- ACTH injection (cosyntropin) 25 mcg IV push
- Blood draw (t=30 min) for cortisol, aldosterone (2 ml)
- Blood draw (t=60 min) for cortisol, aldosterone (2 ml)
- ACTH injection (cosyntropin) 225 mcg IV push (250 mcg total given over the 2 injections)
- Blood draw (t=90 min) for cortisol, aldosterone (2 ml)
- Blood draw (t=120 min) for cortisol, aldosterone (2 ml)
- Protocol ends.
- Subjects will be monitored until 3 hours after the final ACTH injection for safety reasons.

6.0 Risks

There are minor risks and discomforts associated with blood sampling. We will insert a plastic catheter into the vein to allow drawing blood while minimizing repeated sticks during the study. This may cause a brief period of pain and possibly a small bruise at the site. Occasionally, a person feels faint when their blood is drawn. There is a small risk of bleeding after removal of the catheter and possibly a bruise at the site, which can be prevented by tight compression on the site. Rarely, an infection develops which can be treated.

ACTH injection: Commonly reported reactions include nausea, sweating, dizziness, itchy skin, redness and/or swelling at the injection site, palpitations, and facial flushing. These reactions are usually resolved within a few hours. Rare side effects include rash, fainting, headache, blurred vision, severe swelling, severe dizziness, trouble breathing, and irregular heartbeat.

We cannot foresee any other risks, but there may be previously unknown or unforeseen risks. By not allowing pregnant females to participate, we will eliminate any risks these procedures might have for a pregnant woman.

7.0 Costs and Compensation to Participants

Study related materials will be provided to the participants without charge. The inpatient stays will be covered by a grant from the Vanderbilt Institute of Clinical and Translational Research (VICTR), and the assay and testing costs will be covered by an NIH grant. The participants will be responsible for their own travel expenses to come to Vanderbilt and any extraneous expenses related to their time in Nashville. Subjects will not be compensated for their participation.

8.0 Reporting of Adverse Events or Unanticipated Problems involving Risk to Participants or Others

The PI and at least one co-investigator will review data from subjects enrolled in this study on a bi-monthly basis.

Adverse events will be monitored on an ongoing basis by Drs. Satish Raj and Victor Nwazue (both of whom will be responsible for tracking adverse events in this study). Any adverse event of a serious or greater nature will be reviewed immediately with the P.I.

The adverse event will be described with the following information: description of the event; outcome of the event; duration of the event; relationship to study procedure; requirement, if any, for treatment or intervention; and outcome.

Adverse events will be graded according to the following scale:

0 = No adverse event or within normal limits
1 = Mild adverse event (transient and mild in nature, and no treatment is necessary)
2 = Moderate adverse event (some intervention and treatment are necessary, but participant completely recovers
3 = Severe adverse event (an event that results in hospitalization, disability, or death or is life-threatening)

The investigator will state his opinion on whether there is a reasonable possibility that the event or experience is elated to a procedure performed as part of this study. Serious adverse events will be reported in writing to the Vanderbilt IRB within10 days of the investigators' knowledge of the event. All

nonserious adverse events will be summarized once a year, as part of the annual review report to the IRB.

9.0 Study Withdrawal/Discontinuation

The investigators or Vanderbilt may stop participants from taking part in this study at any time if it is in their best interest, if they do not follow the study rules, or if the study is stopped.

Participants are free to withdraw from this study at any time. We will cease to collect study information at the time of withdrawal of consent. Withdrawal of consent or refusal to participate will not prejudice their health care.

10.0 Statistical Considerations

10.1 Statistical Analysis Plan

The primary statistical analysis will focus on the comparison in aldosterone levels at 60 min post-injection of ACTH 1 mcg IV in POTS patients and control subjects using a Mann-Whitney U test. Secondary endpoints will include the magnitude of aldosterone increase in response to low and high dose ACTH, and cortisol response to ACTH between the 2 groups.

Data will be entered into a Microsoft Excel spreadsheet on password-protected Vanderbilt servers or a CTSA-generated, HIPAA-compliant Research Data Capture (REDCap) web-based database. SPSS for Windows (version 21.0), Stata 11.0, and R (www.r-project.org) will be used for data analysis. The sample size calculations were performed using the software package PS Power and Sample Size Calculations version 3.0.1 53. A co-investigator on this grant, William Dupont, Ph.D., Professor of Biostatistics at Vanderbilt University, will be primarily responsible for the statistical analyses of this study.

10.2 Sample Size

Our prior data shows that in response to orthostatic stress, the aldosterone level was 480 pmol/L in patients with POTS and 810 pmol/L in control subjects. The pooled standard deviation was 370 pmol/L. If we study 25 patients and 25 control subjects, we would have 80% power to detect a difference of 300 pmol/L (a clinically meaningful difference), with a similar pooled standard deviation and alpha=0.05.

11.0 Privacy/Confidentiality Issues

All the investigators have completed Vanderbilt training in compliance with the HIPAA regulations. Every effort will be made to protect and respect patient confidentiality and privacy within the limits of HIPAA. Research data will be entered into a password-protected database (REDCap.) The Principal Investigator's Assurance Statement has been submitted with the proposal.

12.0 Follow-up and Record Retention

The study will last 1 day for each participant, and it will likely take 3 years to enroll the required number of participants. The study results will be retained in our research records for at least six years after the study is completed. At that time any research information in the medical record will be kept indefinitely. Any research information not already in the medical record may be kept indefinitely.

Vanderbilt University Institutional Review Board
Informed Consent Document for Research

Principal Investigator:Emily Garland, PhD Version Date: 5/28/14
Study Title: Aldosterone and Sodium Regulation in Postural Tachycardia Syndrome Aim 1b: ACTH Stimulation
Institution/Hospital: Vanderbilt University

This informed consent applies to persons with postural tachycardia syndrome (POTS) participating in the "Dietary Salt in Postural Tachycardia Syndrome" study.

Name of participant: _____ Age: _____

The following is given to you to tell you about this research study. Please read this form with care and ask any questions you may have about this study. Your questions will be answered. Also, you will be given a copy of this consent form.

You do not have to be in this research study. You can stop being in this study at any time. If we learn something new that may affect the risks or benefits of this study, you will be told so that you can decide whether or not you still want to be in this study.

1. What is the purpose of this study?

You are being asked to take part in this research study because you have postural tachycardia syndrome (POTS) and are taking part in another study (Dietary Salt in Postural Tachycardia Syndrome). We want to measure chemicals in your blood while you are on a very low salt diet. About 50 people will take part in this study.

2. What will happen and how long will you be in the study?

If you agree to be in this study, we will use information you have given us for other studies, and we will look at your medical record. We will also use information you have given us for the Dietary Salt in Postural Tachycardia Syndrome study (called the parent study.)

After Day 7 of the low salt diet phase of the parent study (there are two phases), we will ask you to stay over 1 more night for this study. You will not have anything to eat or drink after midnight. We will do the study in the morning, before you have eaten. We will have you sit in a chair and place a small tube (catheter) in the vein of each of your arms if there is not one already there from the parent study. After you have been seated for 30 minutes, we will take blood from one tube in your arm (about 1 teaspoon.)

We will then give you a small dose of cosyntropin through the tube, a medication approved by the Food and Drug Administration for use in the test for certain problems of the adrenal gland. We will take small blood samples after 30 minutes and again after 60 minutes (about ½ teaspoon each time.)

After the 60-minute blood draw, we will give you another small dose of cosyntropin. We will again take small blood samples after 30 minutes and again after 60 minutes (about ½ teaspoon each time.)

After the 60-minute blood sample, we will remove the tubes from your arm, and you will be finished with the study. You will stay in the CRC for a total of 3 hours after you receive the cosyntropin so that we can monitor you. At the end of this period, you may go.

3. Costs to you if you take part in this study:

There is no cost to you for taking part in this study.

4. Side effects and risks that you can expect if you take part in this study:

Inconveniences: It may be inconvenient to stay another night on the CRC.

Blood drawing and catheter in vein: Drawing blood with a needle in a vein may be painful and may cause bruising, bleeding, or rarely, infection. Some people may feel faint when having a needle put in their arm.

Cosyntropin: Common reactions include nausea, sweating, dizziness, itchy skin, redness and/or swelling at the injection site, palpitations, and facial flushing. These reactions usually go away within a few hours. Rare side effects include rash, fainting, headache, blurred vision, severe swelling, severe dizziness, trouble breathing, and irregular heartbeat.

5. Risks that are not known:

None.

6. Payment in case you are injured because of this research study:

If it is determined by Vanderbilt and the Investigator that an injury occurred as a direct result of the tests or treatments that are done for research, then you and/or your insurance will not have to pay for the cost of immediate medical care provided **at Vanderbilt** to treat the injury.

There are no plans for Vanderbilt to pay for the costs of any additional care. There are no plans for Vanderbilt to give you money for the injury.

7. Good effects that might result from this study:

a) The benefits to science and humankind that might result from this study. We may learn more about how the autonomic nervous system may affect people with POTS. This may lead to new treatments for this condition.

b) The benefits you might get from being in this study. none

8. Other treatments you could get if you decide not to be in this study:

This is not a treatment study. You can choose not to be in this study, and nothing about your health care will change.

9. Payments for your time spent taking part in this study or expenses:

You will not be paid for being in this study.

10. Reasons why the study doctor may take you out of this study:

You will be withdrawn from the study if the study doctors decide it is best for you. If the study doctors withdraw you from the study, you will be told the reason.

11. What will happen if you decide to stop being in this study?

If you decide to stop being part of the study, you should tell your study doctor.

12. Who to call for any questions or in case you are injured:

If you should have any questions about this research study or if you feel you have been hurt by being a part of this study, please feel free to contact Dr. Emily Garland at 615-936-1748 or the research nurse at 615-343-6862.

For additional information about giving consent or your rights as a person in this study, to discuss problems, concerns, and questions, or to offer input, please feel free to call the Vanderbilt University Institutional Review Board Office at (615) 322-2918 or toll free at (866) 224-8273.

13. Confidentiality:

All efforts, within reason, will be made to keep your personal information in your research record confidential but total confidentiality cannot be guaranteed. The study results will be kept in your research record for at least seven years after the study is over for as long as we need the information for the study. All the information on paper will be kept locked in a secure location. Any information kept in a computer will be through the Vanderbilt CRC data system, which has many safeguards. Only members of Dr. Garland's research team will be able to see any of the information that would identify you. Any research data entered into your medical record will be kept as long as it is needed.

Vanderbilt may share your information, without identifiers, to others or use it for other research projects not listed in this form. Vanderbilt, Dr. Garland and her staff will comply with any and all laws regarding the privacy of such information. There are no plans to pay you for the use or transfer of this de-identified information.

14. Authorization to Use/Disclose Protected Health Information

All efforts, within reason, will be made to keep your protected health information (PHI) private. PHI is your health information that is, or has been gathered or kept by Vanderbilt as a result of your healthcare. This includes data gathered for research studies that can be traced back to you. Using or sharing ("disclosure") such data must follow federal privacy rules. By signing the consent for this study, you are agreeing ("authorization") to the uses and likely sharing of your PHI. If you decide to be in this research study, you are also agreeing to let the study team use and share your PHI as described below.

As part of the study, Dr. Garland and her study team may share the results of your study and/or non-study linked blood pressure, heart rate, and breathing tests, as well as parts of your medical record, to the groups named below. These groups may include people from the Federal Government Office for Human Research Protections, the Vanderbilt University Institutional Review Board, and the National Institutes of Health. Federal privacy rules may not apply to these groups; they have their own rules and codes to assure that all efforts, within reason, will be made to keep your PHI private.

The study results will be kept in your research record for at least six years after the study is finished. At that time, the research data that has not been put in your medical record will be kept indefinitely. Any research data that has been put into your medical record will be kept for an unknown length of time.

Unless told otherwise, your consent to use or share your PHI does not expire. If you change your mind, we ask that you contact Dr. Garland in writing and let her know that you withdraw your consent. Her mailing address is

Dr. Emily Garland
AA3228 Medical Center North
1161 21st Avenue South
Vanderbilt University
Nashville, TN 37232-2195

At that time, we will stop getting any more data about you. But, the health data we stored before you withdrew your consent may still be used for reporting and research quality.

If you decide not to take part in this research study, it will not affect your treatment, payment or enrollment in any health plans or affect your ability to get benefits. You will get a copy of this form after it is signed.

STATEMENT BY PERSON AGREEING TO BE IN THIS STUDY

I have read this consent form and the research study has been explained to me verbally. All my questions have been answered, and I freely and voluntarily choose to take part in this study.

Date	Signature of patient/volunteer

Consent obtained by:

Date	Signature
	Printed Name and Title

Vanderbilt University Institutional Review Board
Informed Consent Document for Research

Principal Investigator:Emily Garland, PhD Version Date: 5/28/14
Study Title: Aldosterone and Sodium Regulation in Postural Tachycardia Syndrome Aim 1b: ACTH Stimulation
Institution/Hospital: Vanderbilt University

This informed consent applies to healthy volunteers participating in the "Dietary Salt in Postural Tachycardia Syndrome" study.

Name of participant: _____ Age: _____

The following is given to you to tell you about this research study. Please read this form with care and ask any questions you may have about this study. Your questions will be answered. Also, you will be given a copy of this consent form.

You do not have to be in this research study. You can stop being in this study at any time. If we learn something new that may affect the risks or benefits of this study, you will be told so that you can decide whether or not you still want to be in this study.

1. What is the purpose of this study?

You are being asked to take part in this research study because you are healthy and are taking part in another study (Dietary Salt in Postural Tachycardia Syndrome). We want to measure chemicals in your blood while you are on a very low salt diet. About 50 people will take part in this study.

2. What will happen and how long will you be in the study?

If you agree to be in this study, we will use information you have given us for other studies, and we will look at your medical record. We will also use information you have given us for the Dietary Salt in Postural Tachycardia Syndrome study (called the parent study.)

After Day 7 of the low-salt diet phase of the parent study (there are two phases), we will ask you to stay over 1 more night for this study. You will not have anything to eat or drink after midnight. We will do the study in the morning, before you have eaten. We will have you sit in a chair and place a small tube (catheter) in a vein in your arm if there is not one already there from the parent study. After you have been seated for 30 minues, we will take blood from the tube in your arm (about 1 teaspoon.)

We will then use the other tube to give you a small dose of cosyntropin, a medication approved by the Food and Drug Administration for use in the test for certain problems of the thyroid gland. We will take small blood samples after 30 minutes and again after 60 minutes (about ½ teaspoon each time.)

After the 60-minute blood draw, we will give you another small dose of cosyntropin. We will again take small blood samples after 30 minutes and again after 60 minutes (about ½ teaspoon each time.)

After the 60-minute blood sample, we will remove the tubes from your arm, and you will be finished with the study. You will stay in the CRC for a total of 3 hours after you receive the cosyntropin so that we can monitor you. At the end of this period, you may go.

3. Costs to you if you take part in this study:

There is no cost to you for taking part in this study.

4. Side effects and risks that you can expect if you take part in this study:

Inconveniences: It may be inconvenient to stay another night on the CRC.

Blood drawing and catheter in vein: Drawing blood with a needle in a vein may be painful and may cause bruising, bleeding, or rarely, infection. Some people may feel faint when having a needle put in their arm.

Cosyntropin: Common reactions include nausea, sweating, dizziness, itchy skin, redness and/or swelling at the injection site, palpitations, and facial flushing. These reactions usually go away within a few hours. Rare side effects include rash, fainting, headache, blurred vision, severe swelling, severe dizziness, trouble breathing, and irregular heartbeat.

5. Risks that are not known:

None.

6. Payment in case you are injured because of this research study:

If it is determined by Vanderbilt and the Investigator that an injury occurred as a direct result of the tests or treatments that are done for research, then you and/or your insurance will not have to pay for the cost of immediate medical care provided **at Vanderbilt** to treat the injury.

There are no plans for Vanderbilt to pay for the costs of any additional care. There are no plans for Vanderbilt to give you money for the injury.

7. Good effects that might result from this study:

a) The benefits to science and humankind that might result from this study. We may learn more about how the autonomic nervous system may affect people with POTS. This may lead to new treatments for this condition.

b) The benefits you might get from being in this study. none

8. Other treatments you could get if you decide not to be in this study:

This is not a treatment study. You can choose not to be in this study, and nothing about your health care will change.

9. Payments for your time spent taking part in this study or expenses:

You will be paid $60 if you complete the study. You may choose to receive a check for this amount or a gift card for the same amount from Target, Walmart, or Amazon.

We may ask you for your Social Security number and address before you are compensated for taking part in this study.

10. Reasons why the study doctor may take you out of this study:

You will be withdrawn from the study if the study doctors decide it is best for you. If the study doctors withdraw you from the study, you will be told the reason.

11. What will happen if you decide to stop being in this study?

If you decide to stop being part of the study, you should tell your study doctor.

12. Who to call for any questions or in case you are injured:

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All efforts, within reason, will be made to keep your personal information in your research record confidential but total confidentiality cannot be guaranteed. The study results will be kept in your research record for at least seven years after the study is over for as long as we need the information for the study. All the information on paper will be kept locked in a secure location. Any information kept in a computer will be through the Vanderbilt CRC data system, which has many safeguards. Only members of Dr. Raj's research team will be able to see any of the information that would identify you. Any research data entered into your medical record will be kept as long as it is needed.

Vanderbilt may share your information, without identifiers, to others or use it for other research projects not listed in this form. Vanderbilt, Dr Raj and his staff will comply with any and all laws regarding the privacy of such information. There are no plans to pay you for the use or transfer of this de-identified information.

14. Authorization to Use/Disclose Protected Health Information

All efforts, within reason, will be made to keep your protected health information (PHI) private. PHI is your health information that is, or has been gathered or kept by Vanderbilt as a result of your healthcare. This includes data gathered for research studies that can be traced back to you. Using or sharing ("disclosure") such data must follow federal privacy rules. By signing the consent for this study, you are agreeing ("authorization") to the uses and likely sharing of your PHI. If you decide to be in this research study, you are also agreeing to let the study team use and share your PHI as described below.

As part of the study, Dr. Garland and her study team may share the results of your study and/or non-study linked blood pressure, heart rate, and breathing tests, as well as parts of your medical record, to the groups named below. These groups may include people from the Federal Government Office for Human Research Protections, the Vanderbilt University Institutional Review Board, and the National Institutes of Health. Federal privacy rules may not apply to these groups; they have their own rules and codes to assure that all efforts, within reason, will be made to keep your PHI private.

The study results will be kept in your research record for at least six years after the study is finished. At that time, the research data that has not been put in your medical record will be kept indefinitely. Any research data that has been put into your medical record will be kept for an unknown length of time.

Unless told otherwise, your consent to use or share your PHI does not expire. If you change your mind, we ask that you contact Dr. Garland in writing and let her know that you withdraw your consent. Her mailing address is

Dr. Emily Garland
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At that time, we will stop getting any more data about you. But, the health data we stored before you withdrew your consent may still be used for reporting and research quality.

If you decide not to take part in this research study, it will not affect your treatment, payment or enrollment in any health plans or affect your ability to get benefits. You will get a copy of this form after it is signed.

STATEMENT BY PERSON AGREEING TO BE IN THIS STUDY

I have read this consent form and the research study has been explained to me verbally. All my questions have been answered, and I freely and voluntarily choose to take part in this study.

Date	Signature of patient/volunteer

Consent obtained by:

Date	Signature
	Printed Name and Title