



# Brain Bank Singapore

## PARTICIPANT INFORMATION SHEET AND CONSENT FORM

### STUDY INFORMATION

**Protocol Title:**

Brain Bank Singapore

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## PURPOSE OF THE RESEARCH STUDY

You are being invited to participate in a research study. Before you take part in this research study, the study must be explained to you and you must be given the chance to ask questions. Please read carefully the information provided here. If you agree to participate, please sign the consent form. You will be given a copy of this document to take home with you.

The Brain Bank Singapore is a national tissue repository dedicated to research into disorders affecting the brain, such as Parkinson's disease and Alzheimer's disease. We collect brain and related tissue from people with and without brain disorders who have decided to leave their brains, after death, to vital research to provide better treatments. Through such donations, we hope to further our understanding of the mechanisms involved in ageing, Parkinson's disease (PD), Alzheimer's disease (AD), and in other related conditions, such as stroke, motor neurone disease, schizophrenia, depression and multiple sclerosis. It is vital for future discoveries that researchers are able to study the human brain tissues that are directly affected by these diseases. The tissue is supplied to neuroscience researchers both within Singapore and internationally. This research could lead to discoveries that help us to find a cure for these devastating brain disorders. You were selected as a possible participant in this study because we are looking for both healthy donors as well as donors with various brain disorders. Brains from healthy donors are just as essential for research; scientists can only work out what is going wrong in diseased brains by comparing them with brains from healthy persons. This study will recruit approximately 1600 participants from multiple healthcare institutions in Singapore, and from the community.

The work of the Brain Bank Singapore is regularly reviewed by an independent panel of scientific experts and all our processes have gained approval from the Ethics Review Committee. This information sheet is designed to answer any questions you may have about brain donation.

## STUDY PROCEDURES

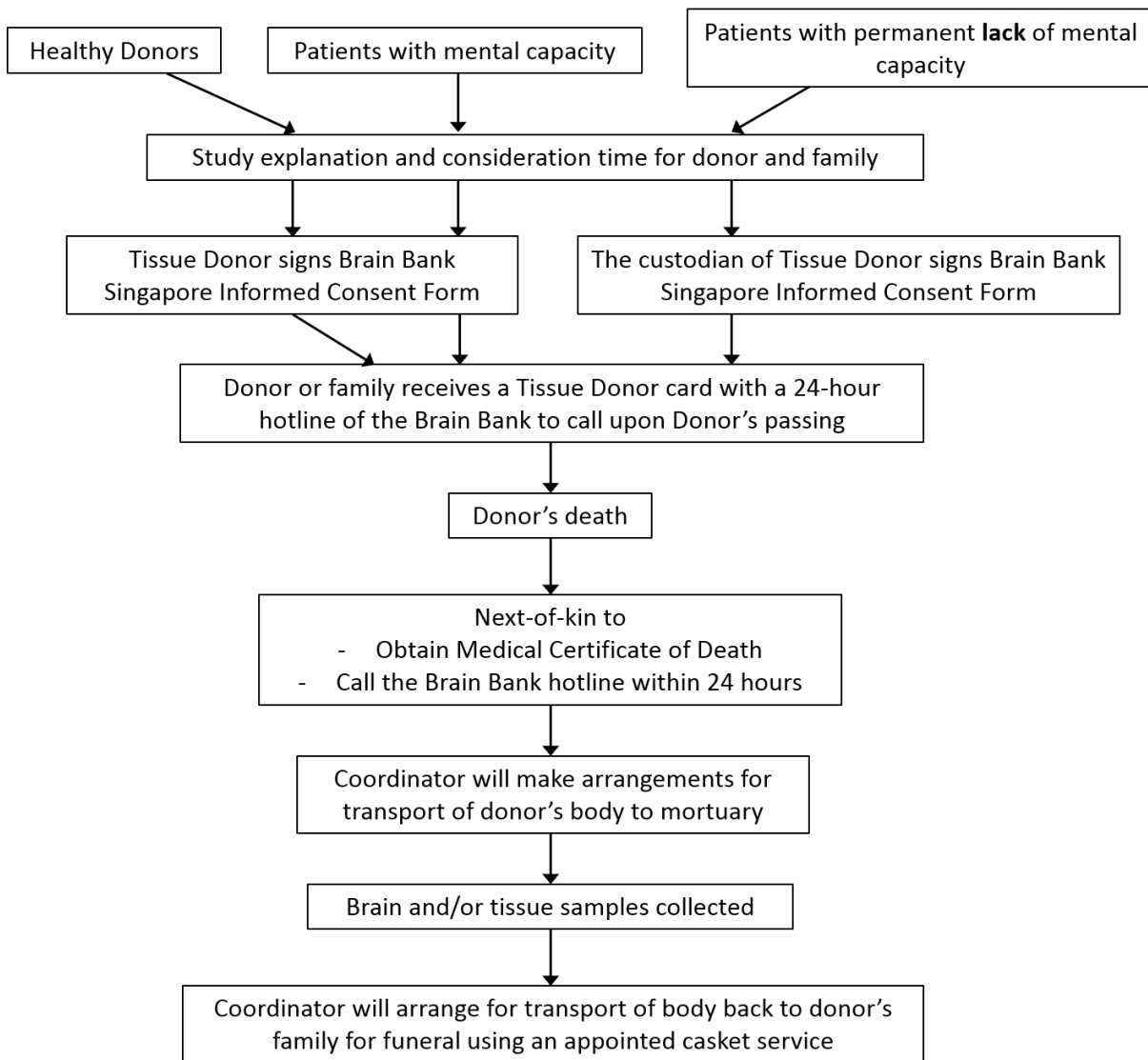
If you wish to take part in brain donation, please discuss it with your next-of-kin and those closest to you. You will then be enrolled into the Brain Bank Singapore brain donation program after completing the consent form below. When we receive your completed form, we will record your details (demographic and relevant medical information) in our secure and confidential brain donation registry. You or your next-of-kin will also be contacted at appropriate regular intervals (e.g. biennial or every 2 years) to complete a questionnaire regarding updates to your medical status. In addition, your treating physician or respective hospital (where necessary) will be contacted in order to collect relevant clinical information. Contact will be made both prior to death and after we have acquired your tissues. All medical and personal information collected is kept strictly confidential.

Your next-of-kin will be provided with a 24-hour telephone number to notify the Brain Bank Singapore in the event of your passing. Upon notification, and after a signed medical certificate of death has been obtained from a general practitioner or hospital doctor, the donor's body will be transferred to the Procedural Skills Laboratory (PSL) at the Singapore General Hospital (SGH), the Anatomy Department at the National University of Singapore, or another approved facility, where the brain, cerebrospinal fluid (CSF) and other tissue samples (where consented for) will be collected. Brain donation will not significantly delay or interfere with your family's plans for a funeral, cremation or burial. The brain (and, if consented, other tissues e.g. spinal cord) will be removed in a respectful and careful manner that will not affect the appearance of the face or body.

After the retrieval process is completed, the body will be returned using an appointed casket service to the donor's relatives who can proceed with the funeral arrangements. These procedures will need to be carried out as rapidly as possible, preferably within 24-hours after death. We aim to collect tissue as quickly as possible because brain and spinal cord tissues deteriorate very rapidly. After the whole brain and other tissue samples (if consented for) have been retrieved, they will be transported to the Brain Bank Singapore at the Lee Kong Chian School of Medicine at Nanyang Technological University (LKC-NTU) Novena campus to be processed, stored and analyzed. After a brain has been collected, we will carry out an in-depth examination of the tissue and may send a report letter to the next-of-kin to explain our findings. These tissue specimens and associated data will be de-identified using an encoding system and stored in a secured encrypted database that is accessible only by the Brain Bank Singapore.

### **Schedule of Procedures:**

1. Donor to sign the Informed Consent Document.
2. Donor to receive a donor card with a 24-hour hotline to the Brain Bank coordinator.
3. Next-of-kin to call the hotline within 24-hours of the donor's passing.
4. After a signed medical certificate of death has been obtained, the donor's body will be transferred to the Procedural Skills Laboratory (PSL) at the Singapore General Hospital (SGH) or Anatomy Department at the National University of Singapore, or another approved facility, where the brain and tissue retrieval will take place.
5. After the brain and tissue samples are collected, the body will be returned to the donor's relatives using an appointed casket service. The brain will be removed in a respectful manner that will not affect the appearance of the body.
6. Brain and tissue samples will be processed and stored at the Brain Bank Singapore (LKC-NTU Novena campus).



***Figure 1. Sequence of events upon consent for brain and/or tissue donation***

Any tissue specimens obtained during the course of this study will be stored for an indefinite amount of time until an ethically-approved research study (local or international) requests the use of these samples. Most of this research will revolve around furthering our understanding of the mechanisms involved in ageing, Parkinson’s disease (PD), Alzheimer’s disease (AD), and other brain disorders, including schizophrenia and depression. Part of this research will include genetic analysis of brain tissue samples to understand how our genetic make-up affects the nature of the brain disorder.

**Future Research**

Your human biological material and data collected during the study will be kept for future research beyond the completion of the study. For this purpose, consent for future research is being sought from you. The tissue samples collected during this study may also be used for purposes other than research such as teaching.

Your human biological material and data will only be released to researchers upon the research study obtaining approval from a relevant Institutional Review Board (IRB). An IRB is an independent committee formally appointed by hospitals and other organisations undertaking

research to conduct initial and subsequent periodic reviews of research involving human subjects.

Samples of your donated human biological material may be shared with researchers outside of Singapore. This is because the researchers who use your human biological material may be working in collaboration with other institutions. We are seeking your permission for your human biological material to be moved to a place outside Singapore if it is necessary for the research. Any human biological material and/or information containing your “Personal Data” that is collected for the purposes described in this Participant Information Sheet and Consent Form will be securely stored in Singapore. Only de-identified human biological material and/or data will be transferred out of Singapore. Any human biological material to be exported overseas may only be released in accordance with the requirements of the Human Biomedical Research Act 2015 of Singapore (HBRA), other applicable laws and the relevant IRB.

The human biological material collected will not be used in restricted human biomedical research involving human-animal combinations in accordance with the HBRA.

Your personal data, as defined in the Personal Data Protection Act 2012 of Singapore (PDPA), and medical records – including but not limited to your medical conditions, medication, investigations and medical history – will be accessed both before and after brain donation and stored securely by the Brain Bank Singapore. This data will be summarised in a de-identified form and provided to researchers for ethically-approved future research studies. In order for the brain and other tissues to be of maximum use for future research studies, it is essential that they are accompanied by a comprehensive clinical history detailing how any medical condition affected you during life.

This study involves the removal of tissue from an adult who lacks mental capacity to give consent for research purposes. This study has been approved by the NTU IRB and the IRB has waived the requirement that the removal of tissue from the above group is primarily for a therapeutic or diagnostic purpose under Section 37(3) of HBRA.

## YOUR RESPONSIBILITIES IN THIS STUDY

If you agree to participate in brain donation, you should:

- Have thoroughly read and understood the information sheet on the donation of brain and other relevant tissue for research.
- Have given the Brain Bank Singapore permission to contact yourself and/or your next-of-kin to obtain your clinical information before and after they have acquired your brain and other tissues, as well as to obtain medical information from the doctors who have treated you. Additionally, having access to your medical history before and after brain donation provides valuable information that will allow researchers to match up symptoms with changes seen in the brain.
- Have discussed this matter with all relevant family members / next-of-kin / legal representatives.

Appreciate the importance of having someone contact the Brain Bank Coordinator as soon as possible following your death.

## WHAT IS NOT STANDARD CARE OR EXPERIMENTAL IN THIS STUDY

The retrieval of the whole brain and related tissues after death for research are not part of standard practice. The autopsy and analysis done on these tissues are also not part of standard practice.

## POSSIBLE RISKS, DISCOMFORTS AND INCONVENIENCES

Brain donation will not delay or interfere with your loved ones' plans for a funeral, cremation or burial. The brain and related tissues are removed in a respectful and careful manner that will not affect the appearance of the face or body.

## POTENTIAL BENEFITS

There are no direct benefits to yourself as a donor, as this study involves tissue donation upon death. However, your participation will add greatly to knowledge about the mechanisms involved in ageing, Parkinson's disease (PD), Alzheimer's disease (AD), and in other brain disorders. Ultimately, we hope to enable and support the neuroscience research community to develop life-changing treatments sooner for future generations.

## ALTERNATIVES

Brain donation is entirely voluntary. Regardless of your participation, you will continue to receive the same standard of care for your condition.

## INCIDENTAL FINDINGS

"Incidental findings" are findings that have potential health or reproductive importance to research participants like you and are discovered in the course of conducting the study, but are unrelated to the purposes, objectives or variables of the study.

Incidental findings might arise after brain donation, from both the current study as well as from future research in which your human biological material may be used, although this is a rare occurrence. For this, you will be asked to indicate whether you wish for your human biological material to be re-identified, and for your next-of-kin/family member to be notified in the event of an important incidental finding.

If you agreed to be re-identified and notified, your clinician/a qualified healthcare professional will explain the incidental finding to your next-of-kin/family member and discuss and advise them on the next steps to follow. For this purpose, please inform the Principal Investigator or any of the study contact persons listed in this document whenever there are changes in your contact details. Your next-of-kin/family member may wish to do more tests and seek advice to confirm this incidental finding. This cost will not be paid for by this study.

## COSTS OF PARTICIPATION

If you consent to brain donation, the following will be performed at **no charge** to you or your family members/ next-of-kin:

- A neuropathological report will be provided to your family members/next-of-kin, if requested, at no cost, when the brain has been fully characterised. This report may also be shared with your clinician involved in your care, if it is necessary, and they can help your family interpret the findings.
- The transportation cost incurred when transporting the donor's body for brain removal, and returning the body back to the donor's relatives via an appointed casket service will

be paid for by the Brain Bank Singapore. Your family members/next-of-kin will have to bear the regular expenses of the funeral.

## RESEARCH RELATED INJURY AND COMPENSATION

This study will recruit donors for post-mortem donation of brain and other tissues, and will not involve any research related injury. Therefore, compensation is not applicable.

## PARTICIPANT'S RIGHTS

Your participation in brain donation is entirely voluntary. Your questions will be answered clearly and to your satisfaction.

In the event of any new information becoming available that may be relevant to your willingness to continue in this study, you/your legally acceptable representative will be informed in a timely manner by the Principal Investigator(s), or his/her representative, and further consent may be required.

The human biological material collected during brain donation will be deemed to be given to the Brain Bank Singapore and will not be returned to your next-of-kin/family member. You give up your rights to the human biological material and any intellectual property rights that may be derived from the use of the human biological material.

By signing and participating in the study, you do not waive any of your legal rights to revoke your consent and withdraw from the study at any time.

## WITHDRAWAL FROM STUDY

You are free to withdraw your consent and discontinue your participation at any time without prejudice to you or effect on your medical care. If you decide to withdraw from the study for any reason, you should:

- Contact the Brain Bank coordinator.
- You will be removed from the Brain Bank Singapore brain donation registry.

Sometimes, there may be occasions when it is not possible to go ahead with brain donation. Some of these situations may include:

- If a donor's death is a Coroner's case and needs to be referred to the coroner for further investigation, this will take priority and the donor may be excluded from the study and from donation.
- Occasionally a donor may have an infection (such as human immunodeficiency virus, HIV) which means that it's unsafe to remove the tissue. Conditions such as malignant cancer may also make tissue unsuitable for research due to the damage caused to the brain by these conditions.
- If there is a prolonged delay between death and brain retrieval of over 48 hours.

The human biological material collected during brain donation will be deemed to be given to the Brain Bank Singapore and will not be returned to your next-of-kin. However, if consent to take part in brain donation was obtained from the donor's next-of-kin or legally acceptable representative, they retain the right to ask the Principal Investigator to discard or destroy any remaining samples if they have not been anonymised, or if the human biological sample(s) is

individually-identifiable. However, the data that have been collected until the time of your withdrawal will be kept and analysed. The reason is to enable a complete and comprehensive evaluation of the study.

## CONFIDENTIALITY OF STUDY AND MEDICAL RECORDS

Your participation in brain donation will involve the collection of Personal Data. Personal Data collected for this study will be kept confidential. Your records, to the extent of the applicable laws and regulations, will not be made publicly available. However, the Regulatory Agencies, NTU Institutional Review Board and government Ministries will be granted access to your Personal Data (or medical records) where necessary to check study procedures and data, without making any of your information public.

When a brain is donated, each donor is given a unique identification code and all personal information is removed. Only the Brain Bank Singapore will have access to the confidential information being collected.

By signing the Consent Form, you (or your legally acceptable representative) consent to: (i) the collection, access to, use and storage of your Personal Data and medical records by the Brain Bank Singapore before and after brain donation, and (ii) the disclosure of such Personal Data in a de-identified form to research scientists for the purpose of their future research studies.

“Personal Data” means data about you which makes you identifiable (i) from such data or (ii) from that data and other information which an organisation has or likely to have access. Examples of personal data include NRIC, medical conditions, medications, investigations and treatment history. Any future research study that requires this de-identified “Personal Data”, will be subject to approval by the relevant Institutional Review Board.

Data collected and entered into the Brain Bank’s secured database are the property of the Brain Bank Singapore. In the event of any publication resulting from your donated tissue, your identity will remain confidential.

Any human biological material and/or information containing your “Personal Data” that is collected for the purposes described in this Participant Information Sheet and Consent Form will be stored in Singapore. Only de-identified human biological material and/or data will be transferred out of Singapore.

By participating in brain donation to the Brain Bank Singapore, you are confirming that you have read, understood and consent to the SingHealth, National Healthcare Group (NHG) and Nanyang Technological University (NTU) Data Protection Policies, the full versions of which are available at

- [www.singhealth.com.sg/pdpa](http://www.singhealth.com.sg/pdpa)
- <https://corp.nhg.com.sg/Pages/PDPA.aspx>
- <https://www.ntu.edu.sg/pdpa/Pages/PPDS.aspx>



## WHO TO CONTACT IF YOU HAVE QUESTIONS REGARDING THE STUDY

If you have questions about this research study, you may contact the Brain Bank Manager at +65 6592 6952 during office hours (8:30am to 5:30pm).

## WHO HAS REVIEWED THE STUDY

This study has been reviewed by the SingHealth Centralised Institutional Review Board and the Nanyang Technological University Institutional Review Board (NTU IRB) for ethics approval. This approval is mutually recognised by National Healthcare Group Domain Specific Review Board.

If you have questions about your rights as a participant, you can call the NTU IRB at +65 6592 2495 during office hours (8:30am to 5:30pm) or email [IRB@ntu.edu.sg](mailto:IRB@ntu.edu.sg)

If you have any feedback about this research study, you may contact the Principal Investigator, or the NTU IRB.

## CONSENT FORM

### Details of Research Study

**Protocol Title:** Brain Bank Singapore

**Principal Investigator:**

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**Site Principal Investigators:**

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Dr Jimmy Lee, Senior Consultant  
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Dr Ern Yu Tan, Senior Consultant  
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Tel: +65 6357 7000

Dr Simon Ting, Senior Consultant  
Changi General Hospital, Department of Neurology  
2 Simei Street 3, Singapore 529889  
Tel: +65 6788 8833

By signing this consent form,

- I agree to participate in brain donation to the Brain Bank Singapore as described and on the terms set out in the Participant Information Sheet.
- In the event of my death, I wish the Brain Bank Singapore to retrieve and retain my brain, cerebrospinal fluid, and samples of other tissues (as indicated) for their respectful and ethical use in Future Research, including genetic analysis.
- I give the Brain Bank Singapore permission to contact myself and/or next-of-kin, as well as my treating physician or respective hospital (if necessary) at appropriate intervals (e.g. biennial or every 2 years) to obtain clinical information prior to my demise and after they have acquired my tissues.
- I agree for the Brain Bank Singapore to access and collect my Personal Data and medical records before and after brain donation for the purposes of ethically-approved Future Research and to provide this information to researchers in a de-identified form.
- I agree for the human biological material and/or anonymised data to be transferred outside of Singapore for Future Research.
- I have fully discussed and understood the purpose and procedures of brain and tissue donation. I have been given the Participant Information Sheet and the opportunity to ask questions about brain donation and have received satisfactory answers and information.
- I confirm that I have no religious reservations regarding my participation in brain donation to the Brain Bank Singapore.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reasons and without my medical care being affected.
- By participating in this research study, I confirm that I have read, understood and consent to the SingHealth, NHG and NTU Data Protection Policies.

Name of Donor: \_\_\_\_\_

In addition to my brain and cerebrospinal fluid, I hereby donate the following to take effect upon my death (*tick all that apply*):

	Yes	No
- Spinal Cord	<input type="checkbox"/>	<input type="checkbox"/>
- Gut tissues	<input type="checkbox"/>	<input type="checkbox"/>
- Peripheral nerves	<input type="checkbox"/>	<input type="checkbox"/>
- Lymph nodes	<input type="checkbox"/>	<input type="checkbox"/>
- Muscle tissues	<input type="checkbox"/>	<input type="checkbox"/>
- Spleen	<input type="checkbox"/>	<input type="checkbox"/>

**Consent to be Re-identified and Notified in the case of an Incidental Finding**

As explained earlier, there may be potential incidental findings arising from future research studies

	Yes	No
Do you allow for re-identification, and agree to your next-of-kin/nominee being notified about any incidental findings arising from future research? <i>If yes, please provide the following:</i>  Name of next-of-kin/nominee:  Phone/Email:	<input type="checkbox"/>	<input type="checkbox"/>

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Signature/Thumbprint (Right / Left)

\_\_\_\_\_  
Date of signing

**To be filled by the next-of-kin / legal guardian / legal representative for donors who have a permanent lack of mental capacity to give consent and for post-mortem donations**

I hereby give consent, as detailed above, for the above donor to participate in the proposed tissue donation programme. The nature, risks and benefits of the study have been explained clearly to me and I fully understand them.

\_\_\_\_\_  
Name of next-of-kin/ legal guardian/ legal representative

\_\_\_\_\_  
Signature/ Thumbprint (Right / Left)

\_\_\_\_\_  
Date of signing

**To be filled by translator, if required**

The study has been explained to the participant/ legal representative in

\_\_\_\_\_ by \_\_\_\_\_  
Language Name of translator

**To be filled by witness, where applicable**

I, the undersigned, certify that:

- I am 21 years of age or older.
- To the best of my knowledge, the participant or the participant’s legal representative signing this informed consent form had the study fully explained in a language understood by him/ her and clearly understands the nature, risks and benefits of his/ her participation in the study.
- I have taken reasonable steps to ascertain the identity of the participant or the participant’s legal representative giving the consent.
- I have taken steps to ascertain that the consent has been given voluntarily without any coercion or intimidation.

Witnessed by: \_\_\_\_\_  
Name of witness Date of signing

\_\_\_\_\_  
Signature of witness

1. An impartial witness (who is 21 years of age or older, has mental capacity, who is independent of the research study, and cannot be unfairly influenced by people involved with the research study) should be present during the entire informed consent discussion if a participant or the participant’s legal representative is unable to read, and/or sign and date on the consent form (i.e. using the participant or legal representative thumbprint). After the written consent form and any written information to be provided to participant, is read and explained to the participant or the participant’s legal representative, and after the participant or the participant’s legal representative has orally consented to the participant’s participation in the study and, if capable of doing so, has signed and personally dated the consent form, the witness should sign and personally date the consent form. This is applicable for Clinical Trials regulated by HSA and Human Biomedical Research under HBRA.

2. For HBRA studies, the witness may be a member of the team carrying out the research only if a participant or the participant’s legal representative is able to read, sign and date on the consent form.

**Investigator’s Statement**

I, the undersigned, certify to the best of my knowledge that the participant/ participant’s legal representative signing this consent form had the study fully explained and clearly understands the nature, risks and benefits of his/ her/ his ward’s/ her ward’s participation in the study.

\_\_\_\_\_  
Name of Investigator/ Signature Date  
Person obtaining consent

