

Maltese encephalitis: guidelines for you and your veterinarian

Unfortunately, small breed dogs such as the Maltese are susceptible to diseases that cause inflammation of the brain and/or spinal cord. The formal names for these diseases include granulomatous meningoencephalomyelitis (GME), necrotizing meningoencephalitis (NME) and necrotizing leukoencephalitis (NLE). These diseases can cause behavior changes, seizures, circling, blindness, difficulty walking, coma and death. We do not know exactly what causes these diseases. We also do not know the best way to treat these diseases, although many treatment advances have been made in the past decade. Tests such as magnetic resonance imaging (MRI) and cerebrospinal fluid (CSF) analysis are helpful in diagnosing these disorders, but there is no way to determine with accuracy if a dog has one of these diseases except to evaluate the brain tissue of dead dogs. These are devastating diseases and it is very important that we continue to learn more about them. Currently, Dr. Scott Schatzberg (Emergency and Specialty Center of Santa Fe), Dr. Renee Barber (University of Georgia College of Veterinary Medicine) and Dr. Matthew Huentelman (The Translational Genomics Research Institute) are studying the genetics of NME in the Pug, Maltese and Chihuahua, and plan to expand to study GME and NLE in the future. To do this, they need samples from Maltese dogs that have been diagnosed with encephalitis as well as samples from older healthy Maltese dogs.

If your Maltese has been diagnosed with GME, NME, NLE or an unknown form of encephalitis and you are interested in participating in this on-going research, please work with your veterinarian to complete the following forms.

If your Maltese has died or will likely be euthanized, please see [Form 1](#) and [Form 3](#).

If your Maltese is alive and being treated for encephalitis, please see [Form 2](#) and [Form 3](#).

**IMPORTANT: If you have a healthy Maltese and are interested in contributing to our research efforts, please consider having your pet donate a DNA sample. We are always looking for healthy control dogs, ideally age 5-12. These samples are critical to the research efforts. If you are interested, please see [Form 4](#).

We recognize how devastating the diagnosis of encephalitis can be, and it has been our goal to support and fund research so that we can see an end to this terrible disease. We thank you for your interest in participating in our research at this most difficult time.

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FORM 1

Form 1 is for pets that have died or will be euthanized because of encephalitis, including GME, NME, NLE or any other form of encephalitis.

Form 1 contains: a) instructions for your veterinarian on collecting and processing the tissue needed for our research, b) contact information for Dr. Barber and c) a request for whatever records are available on the pet, such as seizure history, MRI, blood tests, etc.

IMPORTANT: Please arrange aftercare (cremation, burial, etc.) for your pet with your veterinarian as soon as possible after your pet has passed. **Your pet's brain will be evaluated by a neuropathologist and you will be contacted with the results as soon as they are available (be aware this can take 1 month or longer).** If you do not want to be contacted with the results, please let us know.

INSTRUCTIONS FOR VETERINARIAN:

1. If possible, obtain 2-3ml of blood in an EDTA tube prior to death or euthanasia. Blood can be stored in the refrigerator for up to 1 week prior to shipment.
2. At necropsy, remove the entire brain and place in 10% formalin. After the brain is thoroughly fixed (3-5 days), it can be placed in a ziplock bag with only a tiny amount of formalin to keep it moist. Then double or triple bag it to make sure there is no leakage during shipment. Please **DO NOT** send the entire head, only the brain to ensure the tissue is properly fixed.
3. At necropsy, excise two 2cm x 2cm sections of liver. Place one section into 10ml absolute isopropyl or rubbing alcohol in a tightly sealed container and store at room temperature. Place the other section into a ziplock bag or other appropriate container. This sample can be stored in the refrigerator for up to 1 week prior to shipment.
4. Please label all samples with the patient name, owner last name and date of necropsy.

Samples should be shipped overnight at room temperature in standard packaging to insure against breakage. Please include material to absorb any leaks that occur during shipment.

Ship to:

Renee Barber
Department of Small Animal Medicine and Surgery
University of Georgia College of Veterinary Medicine
501 DW Brooks Drive
Athens, GA 30602
rbarber1@uga.edu

Please include complete medical records for the animal, including vaccination dates and manufacturers. Individual veterinarians will be responsible for obtaining permission to use the pet's tissues for genetics research. If needed, veterinarians can contact Dr. Renee Barber if they would like help developing a release form for owners to sign.

FORM 1 continued

RECORDS NEEDED:

(These records are likely best supplied by the owner and the veterinarian. We understand that not all information is available on every animal.)

1. Form 3
2. Vaccination records – part of Form 3
3. Pedigree
4. Seizure history
5. Treatment and condition progression
6. Neurological examination notes
7. Complete blood panel results, including:
 - a. CBC
 - b. Chemistry
 - c. Urinalysis
 - d. Bile acid test
 - e. Lactic acid test
 - f. Infectious disease titers
8. CSF results
9. MRI results (Generally, the facility that performed the MRI can provide a copy on CD.)

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FORM 2

Form 2 is for pets that are alive and being treated for encephalitis, including GME, NME, NLE or any other form of encephalitis.

Form 2 contains: a) instructions for sample collection and shipment, b) contact information for Dr. Barber and c) a list of records needed, such as medical history, MRI, blood tests, etc.

INSTRUCTIONS FOR SAMPLE COLLECTION AND SHIPMENT:

Your pet's DNA can be collected in one of two ways: from a small blood sample collected by your veterinarian (preferred) or from a cheek swab.

Blood sample

Have your veterinarian collect and ship your pet's blood to us. We need 2-3ml of blood in an EDTA tube. Blood can be stored in the refrigerator for up to 1 week prior to shipment.

Cheek swab

If you would prefer to get a cheek swab for your pet, please contact Jackie (jamimaltese@verizon.net) to acquire the necessary supplies and instructions.

Samples can be shipped at room temperature to:

Renee Barber
Department of Small Animal Medicine and Surgery
University of Georgia College of Veterinary Medicine
501 DW Brooks Drive
Athens, GA 30602
rbarber1@uga.edu

Please include complete medical records for the animal, including vaccination dates and manufacturers. Individual veterinarians will be responsible for obtaining permission to use the pet's tissues for genetics research. If needed, veterinarians can contact Dr. Renee Barber if they would like help developing a release form for owners to sign.

FORM 2 continued

RECORDS NEEDED:

(These records are likely best supplied by the owner and the veterinarian. We understand that not all information is available on every animal.)

1. Form 3
2. Vaccination records – part of Form 3
3. Pedigree
4. Seizure history
5. Treatment and condition progression
6. Neurological examination notes
7. Complete blood panel results, including:
 - a. CBC
 - b. Chemistry
 - c. Urinalysis
 - d. Bile acid test
 - e. Lactic acid test
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8. CSF results
9. MRI results (Generally, the facility that performed the MRI can provide a copy on CD.)

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FORM 3 (Submission form)

Form 3 should be filled out by **ALL** Maltese owners participating in encephalitis research. It asks for general information on the pet's health, vaccine history, family history and owner contact information. Please email the form to Dr. Barber at rbarber1@uga.edu.

OWNER INFORMATION:

Name: _____

Address: _____

Phone number(s): _____

Email: _____

May we contact you for additional information if necessary?

Yes No

If yes, what do you prefer?

Phone Email

PET INFORMATION:

Registered name: _____

Call name: _____

AKC registration number: _____

Date of birth: _____

Sex (male vs. female): _____

Status (spayed vs. neutered vs. unaltered): _____

Height (at withers): _____

Weight: _____

Is pedigree available and included with form?

Yes No

If no: Will mail to Dr. Barber Will email to Dr. Barber

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FORM 3 continued

Date of most recent vaccination	Vaccine	Manufacturer

Administering veterinarian: _____

Veterinarian contact info: _____

Please provide a brief medical history (including when signs / symptoms of encephalitis first began, what the signs / symptoms were, how the signs / symptoms have progressed over time, what medications have been administered, did the signs / symptoms improve or worsen with medication):

Please describe any other known medical conditions:

FORM 3 continued

Current medications (name, dose, how often they are administered):

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FORM 4

If you have a healthy Maltese and are interested in contributing to our research efforts, please consider having your pet donate a DNA sample. We are always looking for healthy control dogs and these samples are critical to the research efforts. Ideally healthy control dogs should be between 5-12 years old but samples will be accepted from younger and older dogs as well. If you are interested, please see the sample collection instructions below and fill out and email the necessary information to rbarber1@uga.edu.

INSTRUCTIONS FOR SAMPLE COLLECTION AND SHIPMENT:

Your pet's DNA can be collected in one of two ways: from a small blood sample collected by your veterinarian (preferred) or from a cheek swab.

Blood sample

Have your veterinarian collect and ship your pet's blood to us. We need 2-3ml of blood in an EDTA tube. Blood can be stored in the refrigerator for up to 1 week prior to shipment.

Cheek swab

If you would prefer to get a cheek swab for your pet, please contact Jackie (jamimaltese@verizon.net) to acquire the necessary supplies and instructions.

Samples can be shipped at room temperature to:

Renee Barber
Department of Small Animal Medicine and Surgery
University of Georgia College of Veterinary Medicine
501 DW Brooks Drive
Athens, GA 30602
rbarber1@uga.edu

Please include complete medical records for the animal, including vaccination dates and manufacturers. Individual veterinarians will be responsible for obtaining permission to use the pet's tissues for genetics research. If needed, veterinarians can contact Dr. Renee Barber if they would like help developing a release form for owners to sign.

FORM 4 continued

OWNER INFORMATION:

Name: _____

Address: _____

Phone number(s): _____

Email: _____

May we contact you for additional information if necessary?

Yes No

If yes, what do you prefer?

Phone Email

PET INFORMATION:

Registered name: _____

Call name: _____

AKC registration number: _____

Date of birth: _____

Sex (male vs. female): _____

Status (spayed vs. neutered vs. unaltered): _____

Height (at withers): _____

Weight: _____

Is pedigree available and included with form?

Yes No

If no: Will mail to Dr. Barber Will email to Dr. Barber

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FORM 4 continued

Date of most recent vaccination	Vaccine	Manufacturer

Administering veterinarian: _____

Veterinarian contact info: _____

Please describe any known medical conditions:

Current medications (name, dose, how often they are administered):