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GENERAL INFORMATION

A. Telephone: 888-ODH-LABS

Regular Mailing Address

Ohio Department of Health Laboratory
8955 East Main Street
Reynoldsburg, OH 43068

Specimen Shipping Address (for Courier Services)

Ohio Department of Health Laboratory
8995 East Main Street
Building 22
Reynoldsburg, OH 43068

B. Specimens to be sent to the Centers for Disease Control and Prevention (CDC)

All specimens should be submitted to the CDC by way of the ODHL. Exceptions to this policy will be made on a case-by-case basis at the discretion of ODH or the CDC. CDC Form 50.34 should be completed for each submission and directed to the ODHL.

C. Fees and Exemptions for Laboratory Services

Ohio law that establishes the fee for laboratory services (ORC 3701.23) provides for fee exemptions for those specimens or samples where the charging of a fee would "significantly and adversely affect the public health." Administrative Rules 3701-49-01 through 3701-49-03 provide regulations for the charging and exemptions. Specimens and samples which are exempt from a fee include the following:

1. Specimens for Ohio Department of Health (ODH) conducted epidemiological investigations or other official work.
2. Specimens for local health department epidemiological investigations (**with prior approval from the Director of Health**). For information on receiving approval, call the ODH Outbreak Response and Bioterrorism Investigation Team, 614-995-5599.
3. Virus isolation or serology specimens for influenza and vector-borne encephalitis.
4. Sexually transmitted disease specimens from any recognized venereal disease clinic.
5. Specimens from food handlers in public food service operations suspected of being infected with any disease.
6. Enteric disease specimens from contacts of known cases (**initial specimen only**).
7. Any bacterial, fungal, or viral culture isolated in another laboratory or a parasitic sample submitted to the ODHL for confirmation, grouping, or typing.
8. Rabies examinations (except rodents).
9. Temporary (not over 120 days) exemptions granted by the Director of Health in special

emergency situations.

10. Tests done under grants to the ODHL or special contracts with other agencies.
11. Tests specifically exempted by law (e.g. prenatal syphilis and gonorrhea; ORC 3701.47).
12. Tests done under any other law or administrative rule where a specified fee is prescribed.
13. Specimens requested by ODHL because the initial test could not be completed.
14. Certain enforcement action specimens or samples (call ODHL at 888-ODH-LABS if there is a question).

LIST OF FORMS

[D.A.S.H. form](#) (CDC Form 50.34) must accompany all submissions sent to CDC via ODHL (see General Information, page 4; also see Serology Specimens, page 14)

[Microbiology form](#) (HEA 2530) to accompany

- Stool specimens for parasitology (see Stool Specimens, page 8)
- Stool specimens for culture (see Stool Specimens, page 9)
- Specimens for microbiology and mycobacteriology (see Microbiology, page 12)

[Sexually Transmitted Disease form](#) (HEA 2514)

- Selected microbiology specimens (see Microbiology Specimens, page 12)
- Selected serology specimens (see Serology Specimens, page 14)

[Serology Form](#) (HEA 2533)

- Serology specimens (see Serology Specimens, page 14)

[Virus Isolation form](#) (HEA 2529)

- Specimens for viral testing (see Virus Isolation, page 17)

[Rabies Test Submission Report](#) (HEA 2539, rev. 02/07)

- Animal specimens for rabies testing (see Rabies Testing [Animal], page 21)

STOOL SPECIMENS

A. Parasitology

1. Telephone: 614-728-0544
2. Diseases - Use Microbiology Form (HEA 2530)
 - Giardiasis
 - Amebiasis
 - Cryptosporidiosis
3. Materials

O & P kits available from the ODHL - contents:

 - 2 plastic vials (1 with 10% formalin, 1 with PVA fixative) with collection spatulas
 - Mailing container with plastic bag to hold specimen vials during shipping
 - Multi-lingual collection instructions
4. Collection

Use a clean, dry (sterile, if possible) container. Do not mix with urine.
Using collection spatulas:

 - (1) Place a stool specimen (walnut* size) in each vial until liquid reaches the fill line.
 - (2) Thoroughly break up the specimens.
 - (3) Screw caps on tightly and shake vigorously.

*If stool is watery or loose, place 2-3 tablespoons in each vial until liquid reaches the fill line.

 - a) To ensure the recovery of parasitic organisms passed intermittently and in fluctuating numbers, submit THREE stool specimens collected over a 7-10 day period, preferably every other day. Use both the formalin and PVA preservative for each specimen.
 - b) Collect specimens before use of the following materials:
 - barium for radiological examination (delay sampling for 5-10 days if barium has been administered)
 - antibiotics (delay sampling for at least 2 weeks if antibiotics have been used)
 - antimalarial agents
 - mineral oil
 - bismuth
 - nonabsorbable antidiarrheal preparations
 - c) Follow collection procedures carefully as outlined on the insert provided with the specimen kit.
 - d) Fill out the lab requisition (ODH Form 2530) completely for each specimen. Submit with specimen, but do not place into plastic bag with the sample vials.
5. Handling and Shipping
 - Screw caps on tightly. Enclose vials in plastic shipping bag.
 - Pack vials to protect against breakage.
 - **Ship** to the ODHL at **ambient temperature** by **regular shipping**.

B. Stool Culture

1. Telephone: 614-728-0544
2. Diseases - Use Microbiology Form (HEA 2530)
 - Botulism
 - Campylobacteriosis
 - *E. coli* O157:H7
 - Salmonellosis (including Typhoid)
 - Shigellosis
 - Vibriosis (including Cholera)
 - Yersiniosis
3. Materials: Fecal kits available upon request from the ODHL
 - Modified Cary-Blair Medium (C&S medium)
 - Instruction sheet (see below)OR
 - 16 x 125mm screw capped tube containing 7ml Cary-Blair (C-B) medium
 - Sterile swabs
 - Instruction sheet (see below)
4. Collection, Storage, and Transport of Stool Specimens (see below)

Modified Cary Blair Medium

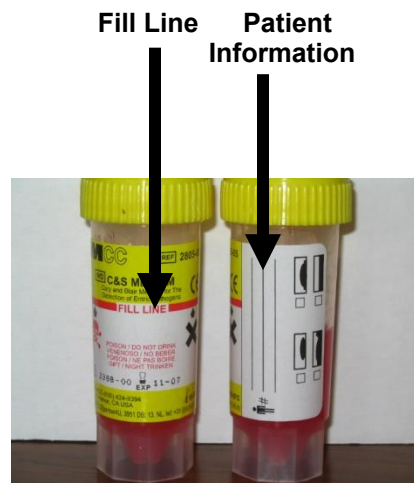
IMPORTANT: Please read and follow all directions. You have been given a collection kit which is a Modified Cary Blair Medium (see image below). It is used to preserve the stool specimen for transport to the laboratory.

Precautions:

- a) **The liquid is not to be consumed.** Handle the vial with caution; keep out of the reach of children.
- b) If the liquid is accidentally consumed, contact your physician immediately, taking the remainder of the vial with you.
- c) If the liquid touches your skin, flush the area thoroughly with water. If skin irritation occurs or persists, contact your physician.
- d) If before use, the liquid is yellow, do not use; return the item to your local health department and obtain a new vial. Yellow indicates a change in the liquid has occurred and may not perform as designed.
- e) Do not use if the expiration date that appears on the vial label has been passed.

Collection:

- a) **DO NOT:**
 - i) Pass the stool directly into the vial.
 - ii) Urinate on the stool or into the vial.
 - iii) Pass the stool into a toilet.
 - iv) Overfill the collection vial.
- b) **DO:**
 - i) Make sure the patient information section on the side of the vial is completed (see diagram).
 - ii) Pass the stool into a clean, dry, container such as a margarine tub, wide mouth jar, milk carton with the top cut off, or if available a bedpan.
 - iii) Use the collection spoon built into the lid of the vial to place small scoops of the stool into the vial until the contents of the vial rise to the "FILL LINE" on the vial label (see diagram).
 - iv) For best results, select areas of the stool that appear bloody or watery. If the stool is formed (hard), sample small amounts from each end and the middle.
 - v) When sufficient stool added to raise the level to the "FILL LINE", replace and twist the cap onto the vial to tightly close.
 - vi) Once the cap is tight, shake the vial vigorously until the contents are well mixed.
 - vii) Wash your hands thoroughly after collection of the specimen.



Storage and Transport:

- a) Place properly labeled vial into a zip-lock plastic specimen bag or other leak-proof container. Do not place the specimen paperwork unprotected within the same zip-lock bag or container with the vial to prevent contamination should the sample leak.
- b) Return the sample and paperwork immediately to your local health department or location as instructed when you were given the collection kit.
- c) Store and ship at room temperature.

Cary Blair Semi-Solid Transport Medium

IMPORTANT: Please read and follow all directions. You have been given a collection kit which is a Modified Cary Blair Medium (see image below). It is used to preserve the stool specimen for transport to the laboratory.

Precautions:

- a) **The gel is not to be consumed.** Handle the tube with caution to avoid breaking the glass; keep out of the reach of children.
- b) If the gel is accidentally consumed, contact your physician immediately, taking the remainder of the tube with you.
- c) If the gel touches your skin, flush the area thoroughly with water. If skin irritation occurs or persists, contact your physician.
- d) Do not use if the expiration date that appears on the tube label has been passed.

Collection of Stool:

- a) DO NOT:
 - i) Do not pass the stool directly into the tube.
 - ii) Do not urinate on the stool or into the tube.
 - iii) Do not pass the stool into a toilet.
 - iv) Do not overfill the collection tube.
- b) DO:
 - i) Make sure a label with the patient's name and collection date is applied to the side of the tube.
 - ii) The stool should be passed into a clean, dry, container such as a margarine tub, wide mouth jar, milk carton with the top cut off, or if available a clean bedpan.
 - iii) Use the provided swab to place a thumbnail-sized amount of the stool into the tube as follows:
 - (a) For best results, select areas of the stool that appear bloody or watery. If the stool is formed (hard), sample small amounts from each end and the middle.
 - (b) Insert and rotate swab in the stool sample.
 - iv) Insert swab into a C-B tube as shown in the diagram.
 - v) Do not remove swab from tube.
 - vi) Break swab off at a length that will allow the cap to be screwed back on the tube.
 - vii) Wash your hands thoroughly after collection of the specimen.



Storage and Transport:

- a) Place properly labeled vial into a zip-lock plastic specimen bag or other leak-proof container.
- b) Do not place the specimen paperwork unprotected within the same zip-lock bag or container with the vial to prevent contamination should the sample leak.
- b) Return the sample and paperwork immediately to your local health department or location as instructed when you were given the collection kit.
- c) Store and ship at refrigerator temperature (4°C). Use *sufficient cold pack(s)* to maintain specimens at 4°C but **DO NOT FREEZE**.

MICROBIOLOGY SPECIMENS

A. Telephone

- 614-728-0544

B. Diseases and Clinical Specimens (excluding stool culture specimens [C-B medium])

Use Microbiology Form (HEA 2530)

- Anthrax: blood/lesions/discharge
- Botulism: food/gastric contents/serum/stool*
- Diphtheria: nasopharyngeal/throat/membrane
- Pertussis: nasopharyngeal
- Tuberculosis: see chart on next page
- Tularemia: lesions/blood

*Stool specimens for culture should also be submitted.

C. Isolates Submitted for Identification

Use [Microbiology Form](#) (HEA 2530)

D. Materials

In general, specimens should be transported on an appropriate medium or subculture and submitted for reference identification.

- Special medium requirements are outlined in the respective writings under the specific diseases.

E. Specimen Collection for Tuberculosis

ODHL supplies sterile 50 ml conical centrifuge tube collection kits for specimen collection (Becton-Dickinson Falcon 352070 or equivalent). Extensive instructions are available for collection of the various specimens which can be tested for tuberculosis (the table on the following page summarizes some of these instructions). Please contact Customer Service at 614-728-0544 before you collect any specimens.

F. Handling and Shipping

All specimens may be shipped at ambient temperatures.
TB specimen chart follows:

TUBERCULOSIS SPECIMENS

SPECIMEN TYPE	SPECIMEN REQUIREMENTS	SPECIAL INSTRUCTIONS	UNACCEPTABLE SPECIMENS
Blood	Submit 5 ml inoculated directly into a BACTEC 13A vial or 10 ml inoculated into an Isolator tube.	Disinfect the site as for routine blood culture. Mix tube contents immediately after collection. Blood collected with heparin or sodium polyanethol sulfonate (SPS) may be inoculated into a BACTEC 13A vial or tube.	Coagulated blood and blood collected in ethylenediaminetetraacetic acid (EDTA/purple top tube), which greatly inhibits mycobacterial growth, even in trace amounts.
Body fluids (pleural, pericardial, peritoneal, etc.)	Submit as much as possible (at least 10-15 ml) in a sterile screw-cap container or syringe with a Luer cap.	Disinfect the site with alcohol if collection is made using a needle and syringe. Send large volumes in several containers, if necessary. The addition of heparin or SPS is helpful for specimens that contain fibrinogen.	
Bronchoalveolar lavage fluid or bronchial washings	Submit >5ml in a sterile container.	Avoid contaminating the bronchoscope with tap water. Saprophytic mycobacteria may produce false-positive culture or smear results.	
Bronchial brushing	Submit a specimen in a sterile container.		
Cerebrospinal fluid	Submit >5 ml in a sterile container.	Send the maximum volume obtainable.	
Gastric lavage fluid		On 3 consecutive days, collect the specimen soon after the patient awakens and while he or she is fasting in order to obtain sputum swallowed during sleep. Use sterile saline for lavage. Neutralize the specimen with 100 mg of sodium carbonate if the time between collection and processing is to exceed 4 hours	Specimen that has not been neutralized and is over 4 hours old.
Sputum	Submit 5 to 10 ml in a sterile screw-cap container (50 ml centrifuge tube preferred). Collect an early-morning specimen from deep, productive cough on 3 consecutive days. Do not pool these specimens; duplicate sputum specimens collected on the same day will be pooled in the laboratory and treated as one specimen.	For expectorated sputum, instruct patient on how to produce sputum specimen as distinct from saliva or nasopharyngeal discharge. Have the patient rinse his or her mouth with water before collecting sputum to minimize contamination of the specimen with food particles, mouthwash, or oral drugs, which may inhibit the growth of mycobacteria. For induced sputum, use sterile hypertonic saline. Avoid sputum contamination with nebulizer-reservoir water. Saprophytic mycobacteria in tap water may produce false-positive culture or smear results. Indicate on the laboratory request form that a specimen is induced sputum, as these watery specimens resemble saliva. When bronchoscopy is performed, the next available sputum may be collected following the procedure because these specimens have a higher yield than other sputa.	Pooled specimens obtained 24 or more hours apart.
Tissue biopsy sample	Submit 1 g of tissue (if possible), without fixative or preservative. A sterile container with a small amount of sterile water or sterile saline (to keep the specimen moist) is acceptable.	Collect the specimen aseptically and avoid indigenous microbiota. Select a caseous portion, if available. Do not immerse the specimen in saline (or other fluid) or wrap it in gauze. Freezing decreases yield.	Specimen submitted in formalin.
Transtracheal aspirate	Submit as much as possible in a syringe with a Luer cap or in another sterile container.		

SEROLOGY SPECIMENS

A. Telephone: 614-728-0544

B. Diseases

- Arbovirus (La Crosse, St. Louis, West Nile; Eastern Equine in an outbreak situation)
 - Use Serology form (HEA 2533)
- Rubeola IgM
 - Use Serology form (HEA 2533)
- Syphilis
 - Use Sexually Transmitted Diseases Form (HEA 2514)

C. Materials

Mailing containers and materials are available from the ODHL upon request.

D. Collection, Handling and Shipping

1. **Paired sera** refers to the need for acute (within 7 days of onset of illness) and convalescent (2-3 weeks after acute specimen) sera. See code at bottom of ODHL Serology form (HEA 2533 8/02).
2. Collect 2-5 ml of serum in a sterile, red-top clot tube with no additives.
3. Blood acceptable in some cases - see specific disease, Section 3.
4. **DO NOT FREEZE** or refrigerate except for stored acute sera.
5. **All acute arboviral** sera should be **submitted immediately**.
6. **Other acute** sera to be stored should be **frozen and stored at -20°C** and shipped as paired sera with the convalescent specimen.
7. Ship by regular mail at ambient temperature.

CHLAMYDIA/GONORRHEA SPECIMENS FOR NUCLEIC ACID TESTING

A. Telephone : 614-728-0544

B. Specimen Collection and Storage

Chlamydia collection kits are available from the ODHL upon request. At the present time, ODHL is performing chlamydia and gonorrhea testing for sentinel sites only.

Specimen collection is a critical step in any diagnostic procedure involving direct testing of patient specimens. Several references on specimen collection procedures are available; abbreviated procedures are presented here.

Note: Only chlamydia cell culture isolation should be used when testing for medico-legal purposes such as the evaluation of sexual abuse.

The only devices that have been validated for collecting swab specimens for testing on the **BD ProbeTec™** ET Instrument are:

- **BD ProbeTec™** ET *Chlamydia trachomatis/Neisseria gonorrhoeae* (CT/GC) Amplified DNA Assay Endocervical Specimen Collection and DRY TRANSPORT Kit
- **BD ProbeTec™** ET *Chlamydia trachomatis/Neisseria gonorrhoeae* (CT/GC) Amplified DNA Assay Male Urethral Specimen Collection and DRY TRANSPORT Kit

Caution: During the collection and processing of specimens, users are advised to observe the same safety precautions as employed when handling or disposing of other potentially infectious materials.

Include the Chlamydia form (HEA 2552a Rev. 4/07) with all specimens submitted.

C. Endocervical Swab Specimen Collection using BD ProbeTec™ ET/GC Amplified DNA Assay Endocervical Specimen Collection and DRY TRANSPORT Kit:

1. Remove excess mucus from the cervical os with the large-tipped cleaning swab provided in the **BD ProbeTec™** ET CT/GC Amplified DNA Assay Endocervical Specimen Collection and DRY TRANSPORT Kit and discard.
2. Insert the Endocervical Specimen Collection and DRY TRANSPORT swab into the cervical canal and rotate for 15-30 seconds.
3. Withdraw the swab carefully. Avoid contact with the vaginal mucosa.
4. Immediately place the cap/swab into the transport tube. Make sure the cap is tightly secured to the tube.
5. Label the tube with patient information and date/time collected.

D. Urethral Swab Specimen Collection using BD ProbeTec™ ET/GC Amplified DNA Assay Male Urethral Collection and DRY TRANSPORT Kit:

1. Insert the Male Urethral Collection and DRY TRANSPORT swab 2 – 4 cm into the urethra and rotate for 3-5 seconds.

2. Withdraw the swab and place the cap/swab into the transport tube. Make sure the cap is tightly secured to the tube.
3. Label the tube with patient information and date/time collected.

E. Swab Storage and Transport

After collection, the endocervical swabs and the male urethral swabs must be stored and transported to the laboratory and/or test site at 2 – 27°C within 10 days.

VIRUS ISOLATION

A. Telephone: 614-728-0544

B. Diseases

Use Virus Isolation Form (HEA 2529)

Adenovirus

Coxsackie virus

Cytomegalovirus (CMV)

Echovirus

Influenza

Parainfluenza

Respiratory Syncytial virus

Smallpox (variola)

Varicella-Zoster virus (VZV)

C. Materials

If materials or help are needed call the telephone extension listed above.

D. Collection and Submission

Most of the specimens submitted for Virus Isolation fall broadly into three groups:

Excretions and exudates - i.e. feces, urine, nasopharyngeal aspirates, cerebrospinal fluid (CSF), and vesicular fluids

Tissues - autopsy and biopsy

Swabs - throat, rectal, nasopharyngeal, conjunctival, vesicle, and genital

E. Procedural guidelines for submission of specimens

1. **Collect specimens aseptically**, preferably within 3 days (acute phase) and no longer than 7 days after the onset of illness.
2. **Choice of specimen** to be collected for Virus Isolation depends on the nature of the symptoms of the patient and knowledge of pathogenesis of agent suspected.
3. **Virus Isolation forms** must be filled out with all patient information completed including: a tentative diagnosis, onset of illness, date the specimen was collected, and return address in space provided.
4. Specimens should be **transported** to the laboratory as quickly as possible under ideal conditions for best recovery of the virus.

F. SPECIMEN GUIDE FOR DIAGNOSIS OF SPECIFIC VIRAL INFECTIONS

Agent	Throat	Stool/ Rectal Swab	C S F	Urine	Vesicle Fluid or Swab	Conjunctiva I Swab/ Scraping	Other	Comment
RESPIRATORY Adenovirus Enterovirus Influenza Virus Parainfluenza Virus Respiratory Syncytial Virus	x x x x x						a	
RASH Maculopapular Adenovirus Enterovirus Vesicular Echovirus Varicella-Zoster Virus	x x x	x x x			x x			
CNS Enterovirus	x	x	x					
CONGENITAL/ PERINATAL Cytomegalovirus Enterovirus	x x	x	x	x				
GASTROINTESTINAL Adenovirus		x						
EYE Adenovirus Enterovirus	x x					x x		b
URINARY Adenovirus Cytomegalovirus (CMV)				x x				

KEY

- a Nasopharyngeal aspirate
- b Other viruses which can cause infections: CMV & VZV

G. Specific Specimens

1. Throat Swabs

- a) Throat swab kits are available on request.
- b) Vigorously swab the posterior pharynx and fauces with a sterile cotton tipped applicator. Do not touch tongue or buccal mucosa.
- c) Break off the swab into the throat swab media (Hank's Balanced Salt Solution).
- d) Label specimen and **refrigerate immediately**.

2. Nasopharyngeal Swabs

- a) Pass a wire cotton tipped nasopharyngeal swab into the nostril parallel with the palate and rotate gently.
- b) Place the swab in the transport media using the same media and kit (Hank's Balanced Salt Solution) as for the throat swab.

Note: Sputum is not acceptable for Virus Isolation. A mucosal swab is the specimen of choice in respiratory illness.

3. Vesicular Fluids

Swabs from ulcers of the mouth, eye, or genitalia should be collected during the first three days after eruption; fluids collected later rarely yield virus.

4. Cerebrospinal Fluid (CSF)

- a) Collect CSF under aseptic conditions.
- b) Place 2 ml in a sterile screw cap tube.
- c) Seal cap with adhesive tape.
- d) Label tube with patient's name and date collected.

5. Urine

- a) Most useful in recovery of CMV.
- b) Collect a clean-catch sample in a sterile container.
- c) After collection, place 2 ml or more in a sterile screw cap tube.
- d) Ship immediately on **wet ice - never freeze a urine specimen**.

6. Fecal Material or Rectal Swab

Fecal Specimens

Collect the specimen as follows:

1. Obtain a stool sample by draping newspaper between toilet seat and toilet. Deposit stool onto newspaper.
2. Using the wooden applicator stick, place a marble-size (2-4 gram) piece of stool in specimen container. Replace the cap; be sure it is secure.
3. Write the patient's name and the date on the label of the container.

Storage: Place the specimen in a refrigerator until it is delivered to the collection site. If a refrigerator is not available, place at least 4 ice cubes in the bottom of the plastic bag, then put the metal container on top of the ice cubes.

DO NOT put the stool specimen in the freezer compartment of a refrigerator.

Rectal Swabs

- a) To be **used only when a stool specimen cannot be obtained**. Chances of isolating a virus from a swab can be 50% less than from a fecal specimen.

- b) Use throat swab kits (containing Hank's Balanced Salt Solution).
- c) Insert a moist **sterile** swab well into the rectum and rub the mucosa until fecal material adheres to the swab.
- d) Place swab in 1-2 ml of Hank's Balanced Salt Solution.

7. Tissue

- a) Specimen should be approximately 1.3 x 1.3 cm
- b) CNS autopsy specimens should be from several areas of the brain and spinal cord.
- c) Post-mortem specimens should be obtained as soon after death as possible.
- d) Do not fix tissues in formalin, embalming fluid or other preservatives.
- e) Place each specimen in a sterile screw cap container labeled with the patient's name, type of specimen, and date collected.
- f) Tape container to exclude carbon dioxide.

8. Blood or Serum

Neither blood nor serum is acceptable specimens for virus isolation. Contact Customer Service 614-728-0544 for directions concerning these specimens.

H. Handling and Shipping Viral Specimens

- 1. It is advisable to inform the ODHL in advance when sending specimens.
- 2. Specimens should be shipped to arrive on a week day - not on a weekend or holiday.
- 3. If delivery to the ODHL will occur **within 24 hours** after collection and **during working hours**:
 - o Place in refrigerator immediately after collection.
 - o Or place on wet ice immediately for shipping.
 - o Use enough wet ice to keep specimen cold (4°C) in transit.

When specimen delivery to the ODHL will be delayed **more than 24 hours after collection**, or occurs over a **weekend or holiday**.

- **Do not freeze** specimen **at regular freezing temperature**, such as in a refrigerator freezer (-20°C) compartment.
- If frozen before shipping, **freeze and store at - 70°C**
- Ship only on **dry ice**. Use enough dry ice to keep specimens frozen.

Exception: Do not freeze urine specimens.

RABIES TESTING (ANIMAL)

Specimen submission abiding by these guidelines will ensure safety for laboratory personnel and timely determination.

A. Telephone

ODH Rabies Lab: 614-644-4654

B. Appropriate Specimens

Live animals will not be accepted at the lab. Send only the head of the animal to be tested. In the case of bats, mice and gerbils, the whole animal is suitable.

Tissue must be fresh. Do not submit maggot-infested or extremely decomposed specimens or specimens fixed in formalin.

C. Specimens Handling and Packaging

Animal heads or brain tissue should be kept refrigerated but not frozen. The specimen should be double bagged using heavy plastic and each bag should be properly sealed. Do not use metal twist ties. If the specimen has any sharp protruding parts such as shattered bone, wrap it in several layers of newspaper first. Place the bagged specimen in an insulated container and surround the specimen with frozen packs. If dry ice must be used, place aluminum foil or several layers of newspaper between it and the specimen to prevent freezing. If more than one animal of the same species is submitted in a container, each head should be bagged and tagged separately for identification. Seal container securely with tape.

D. Laboratory Submission Form ([Rabies Test Submission Report HEA 2539](#) rev. 2/07)

A fully completed Rabies Test Submission Report must be included for each specimen submitted. If the form is submitted within the shipping container, be sure it is sealed in a separate waterproof bag in the event of leakage. If necessary, securely affix it in an envelope to the outside of the container.

E. Fees for Certain Species

There is a \$30 charge for pet and wild rodents including gerbils, hamsters, guinea pigs, mice, rabbits, rats, squirrels and chipmunks, shrews and moles. There is no charge for testing other animal species.

In counties where raccoon rabies is endemic, fee exemption may be requested for testing rabbits or wild rodents. This will be considered only in situations where the rabbit or rodent has displayed clinical signs compatible with rabies and there has been a human exposure. Contact the ODH Zoonotic Disease Program at 888-722-4371.

F. Shipping

Specimens should be either hand delivered, or sent by overnight courier service. Contact local health department for available shipping options in your area. Do not ship on Fridays or before holidays as there may be no one at the lab to accept delivery on weekends. Instead, hold the specimen until the following weekday.

Specimens can be delivered directly to the ODHL Monday through Friday from 8 a.m. until 5 p.m. There is no after-hours or weekend access to the laboratory facility for drop off of specimens. Contact ODH Zoonotic Disease Program for directions.

RABIES TESTING (HUMAN)


Patient history, duration and progression of illness, and laboratory tests for other common etiologies of encephalitis will help determine if rabies should be on the differential diagnosis list for a patient. Patient history is important to identify a possible exposure to rabies and other encephalitides; however, rabies should never be ruled out based solely on the absence of definite exposure history.

Rabies should be considered in patients with signs or symptoms of encephalitis or myelitis, including autonomic instability, dysphagia, hydrophobia, paresis, and paresthesia, particularly if a nonspecific prodrome preceded the onset of these signs by three to four days. Progressive worsening of neurologic signs is characteristic of rabies and should be considered as a positive indicator for rabies. Laboratory tests to rule out common encephalitides (herpes, enteroviruses, arboviruses) should be performed. Negative results of these tests would increase the likelihood of rabies as the diagnosis. If a patient presents with symptoms similar to the ones described above, but the neurologic status does not change and the illness continues for longer than three weeks, rabies is unlikely as the diagnosis.

A. Telephone

ODH Zoonotic Disease Program: 614-752-1029 option 2. The state health department should always be contacted before collecting and submitting samples to the Rabies Laboratory at the Centers for Disease Control and Prevention (CDC). After consulting with the state health department, any remaining questions can be directed to the Rabies Section at the CDC by calling 404-639-1050.

B. Patient History

Please complete the associated form detailing the clinical history of the patient and provide the name and phone number of the physician who should be contacted with the test results. This form must accompany any samples sent to the Rabies Laboratory at the CDC. ( [Possible Human Rabies --Patient Information Form](#))

C. Antemortem Samples

All samples should be considered as potentially infectious. Test tubes and other sample containers must be securely sealed (tape around the cap will insure that the containers do not open during transit). Four samples including saliva, neck biopsy, serum, and CSF fluid are required to provide an antemortem rule out of rabies. A rule out cannot be provided if all samples are not collected.

1. Saliva

Using a sterile eyedropper pipette, collect saliva and place in a small sterile container which can be sealed securely. No preservatives or additional material should be added. Laboratory tests to be performed include detection of rabies RNA (by reverse transcription and polymerase chain reaction, RT/PCR, of extracted nucleic acids) and isolation of infectious virus in cell culture. Tracheal aspirates and sputum are not suitable for rabies tests.

2. Neck Biopsy

A section of skin 5 to 6 mm in diameter should be taken from the posterior region of the neck at the hairline. The biopsy specimen should contain a minimum of 10 hair follicles and be of sufficient depth to include the cutaneous nerves at the base of the follicle. Place the specimen on a piece of sterile gauze moistened with sterile water and place in a sealed container. Do not add preservatives or additional fluids.

Laboratory tests to be performed include RT/PCR and immunofluorescent staining for viral antigen in frozen sections of the biopsy.

3. Serum and cerebral spinal fluid (CSF)

At least 0.5 ml each of serum and CSF should be collected; no preservatives should be added. Do not send whole blood. If no vaccine or rabies immune serum has been given, the presence of antibody to rabies virus in the serum is diagnostic and tests of CSF are unnecessary. Antibody to rabies virus in the CSF, regardless of the immunization history, suggests a rabies virus infection. Laboratory tests for antibody include indirect immunofluorescence and virus neutralization.

4. Brain biopsy

The rarity of rabies and the lack of an effective treatment make the collection of a brain biopsy for antemortem testing unwarranted; however, biopsy samples negative for herpes encephalitis should be tested for evidence of rabies infection. The biopsy is placed in a sterile sealed container; do not add preservatives or additional fluids. Laboratory tests to be performed include RT/PCR and immunofluorescent staining for viral antigen in touch impressions.

D. Postmortem Samples

In certain cases, human samples may need to be tested for rabies postmortem. Consult with the state health department before shipping any samples to the Rabies Laboratory at the CDC. Fresh tissue samples from the central nervous system (brain) should be submitted.

1. Postmortem diagnosis of rabies is made by immunofluorescent staining of viral antigen in touch impressions of brain tissue. Portions of the medulla (brain stem), the cerebellum, and the hippocampus should be frozen and shipped on dry ice to a public health laboratory or the CDC laboratory. Preservation of tissues by fixation in formalin is not recommended if rabies diagnosis is desired.

E. Shipping

If immediate shipment is not possible, samples should be stored frozen at -20°C or below. Samples should be shipped frozen on dry ice by an overnight courier in water-tight primary containers and leak-proof secondary containers that meet the guidelines of the International Air Transport Association. The rabies laboratory at CDC should be telephoned (404-639-1050) at the time of shipment and given information on the mode of shipment, expected arrival time, and courier tracking number. Shipment address is as follows:

Rabies Laboratory
DASH, Bldg 18, Room SSB218
Centers for Disease Control and Prevention
1600 Clifton Road, NE
Atlanta, GA 30333

TICK IDENTIFICATION AND TESTING

A. Telephone: 614-752-1029, option 1

Tick identification is provided by the Zoonotic Disease Program, Ohio Department of Health.

Specimens should be sent to:

Tick Testing
Zoonotic Disease Program (ZDP)
8955 E. Main Street
Reynoldsburg, Ohio 43068

B. Disease Tested For

Lyme disease (LD) in black-legged ticks

All ticks are identified to species and written reports are returned to submitter

C. Materials

Place the tick in a tightly sealed, non-breakable container as described under section F, 'Storage', or use a tick submission mailing tube available by request.

D. Specimens

Any tick, especially those attached to humans, should be submitted. Proper identification of tick species is used to determine disease risk.

E. Collection of specimens

Proper removal of attached ticks is necessary to assure that the structures needed for identification are not damaged. Using sharp-pointed tweezers or your fingers protected by rubber gloves, paper towel, or tissue paper, grasp the tick as close to the skin as possible and pull straight out with steady, even pressure. Do not use Vaseline, fingernail polish, alcohol, cigarettes or matches to try to kill or remove the tick. Disinfect the bite site before and after removing the tick.

F. Storage

Specimens should be stored by placing the ticks in a tightly sealed, non-breakable container such as a film canister or clean plastic, pill bottle. If the tick is alive, place a small, moistened piece of paper towel (1/4" x 1") in the container with the tick. Be sure the paper towel is just moist, not dripping wet as the tick may drown. If the tick is dead, add a small amount of alcohol to preserve the tick. Containers should be mailed as soon after collection of the tick as possible. If needed, the ticks may be safely refrigerated for several days until mailed.

G. Shipping

The container holding the tick (e.g. film canister) should be placed in a mailing container secured with packing material to prevent breakage in transit. In the mailer, please enclose a completed tick form (available at <http://www.odh.ohio.gov/odhPrograms/idc/zoodis/vbdp/vbtick.aspx>) or simply record the following contact information: patient name, address and phone number; date tick was collected; Ohio county where tick was acquired; travel history of patient, if any; and tell us whether or not the tick was attached. Mail the tick to the address listed above. Mailing containers are free upon request from the Zoonotic Disease Program, 614-752-1029.

H. Identification

All ticks received will be identified to species and a written report of the identification will be returned to the submitter along with information about Ohio ticks and tick-borne diseases.

I. Tests

Testing of black-legged ticks for Lyme disease is available to Ohio residents. Tests performed on ticks are **not** diagnostic for human disease. Results tell us whether or not a tick is infected with a particular bacterium, but not if the bacterium was transmitted to a host. The most important information is tick species identification because this will help pinpoint disease risk.

Black-legged ticks are sent to an out-of-state lab for Lyme disease testing and results are available 10-14 days after submission.

People who develop a rash or flu-like symptoms within four weeks after contact with a tick should contact their physician, regardless of tick testing results.