

Specimen Submission Guidelines for Pathologic Evaluation of Myocarditis

Pathogens that cause myocarditis may be distributed focally or sparsely in the heart, despite extensive inflammatory infiltrates in the involved tissue. Because myocarditis can occur in the context of systemic diseases (e.g. Rocky Mountain spotted fever or meningococemia), or as a manifestation of a primary infection involving another organ system (e.g., influenza), collecting multiple representative portions of cardiac tissue, as well as tissue samples from any other organ system with inflammatory cell infiltrates or other findings suggestive of infection, ensures the best chance of detecting the causative agent. Performance of specific immunohistochemical, molecular, or other assays will be determined based on the clinical and epidemiologic information provided by the submitter and the histopathologic features identified in the submitted tissue specimens.

Collection of Tissue Specimens

The preferred specimens include a minimum of 2 paraffin blocks of involved heart tissue, or representative tissues in formalin (i.e., wet tissue). Specific guidelines for these samples include:

1. Multiple fragments of cardiac tissue representing each anatomic portion of the heart involved by inflammatory infiltrates (e.g., ventricles, epicardium, pericardium, valves)

If myocarditis is identified in the context of a systemic illness, representative tissues should be included from any other organ showing significant microscopic pathology.

Submission of Specimens

Paraffin-embedded tissue blocks

In general, this is the preferred specimen and is especially important to submit in cases where tissues have been in formalin for a significant time. Prolonged fixation (>2 weeks) may interfere with some immunohistochemical and molecular diagnostic assays.

Wet tissue

If available, we highly recommend that unprocessed tissues in 10% neutral buffered formalin be submitted in addition to paraffin blocks. The volume of formalin used to fix tissues should be 10x the volume of tissue. Place tissue collected according to the dimensions provided above in 10% buffered formalin for three days (72 hours) for biopsies, and a week for thinly-sliced autopsy tissues. After fixation, if not paraffin-embedded, tissues SHOULD be transferred to 70% ethanol for long term storage and for shipping.

Electron Microscopy (EM) specimens

Samples should be fixed in glutaraldehyde and held in phosphate buffer. Sample containers are filled to the top with phosphate buffer and sent on wet ice. Do not freeze. Epoxy-embedded tissues are also accepted.

Please refer to our General Guidelines for Submitting Pathology Specimens (next page).

Infectious Diseases Pathology Branch (IDPB)

Specimen Submission Requirements

Requirements for submitting diagnostic specimens/cases to IDPB:

A. U.S. health care professionals – first consult with your state health department regarding any sample submissions.

B. Send an email to Pathology@cdc.gov with:

- 1) A brief clinical history
- 2) A copy of the surgical pathology report or autopsy report (prelim reports are acceptable)
- 3) A listing of available formalin-fixed specimen types (wet tissue, paraffin blocks, and/or slides)
- 4) Relevant clinical, gross pathology, or microscopic pathology digital images, as available

C. After you receive approval by email to submit the case to IDPB:

- 1) Electronically fill, save, and print both pages of the [Specimen Submission Form CDC 50.34](#).
 - a) The form must be filled electronically to generate 3 barcodes required for accessioning
 - b) E-mail addresses of the Original and Intermediate submitters (if any) are mandatory fields
- 2) Select Test Order Code CDC-10365 (Pathologic Evaluation of Tissues for Possible Infectious Etiologies)
- 3) Click on links below for specific syndrome based tissue collection instructions:

[Pathologic Evaluation of CNS Infections](#)

[Pathologic Evaluation of Influenza Virus Infections](#)

[Pathologic Evaluation of Myocarditis](#)

[Pathologic Evaluation of Suspect Pneumonia Infections](#)

[Pathologic Evaluation of Rash- and Eschar-Associated Illness](#)

[Pathologic Evaluation of Hepatitis](#)

[Pathologic Evaluation of Sudden Unexplained Infant Death with Pathologic or Clinical Suspicion of Infection](#)

[Pathologic Evaluation of Unexplained Illness Due to Possible Infectious Etiology](#)

[Pathologic Evaluation of Suspect Mycobacterium Cases](#)

D. Mailing/Contact Info:

- 1) Ship to Dr. Sherif Zaki, CDC, IDPB, 1600 Clifton Rd NE, MS: H18-SB, Atlanta, GA 30329-4027
- 2) Mail in suitable packaging for delivery Monday-Friday, excluding Federal holidays
- 3) Send tracking number to Pathology@cdc.gov
- 4) Tel: 404-639-3132, Fax: 404-639-3043, Email: Pathology@cdc.gov