



## AMENDED COVID-19 AUTOPSY GUIDELINE STATEMENT FROM THE CAP AUTOPSY COMMITTEE

### UPDATED 2/2/21:

- Updated links to OSHA and Archives COVID-19 articles
- Added reference 10

### UPDATED 9/11/20:

- Link to list of [private providers of autopsy services](#)
- Slight clarifications in autopsy personnel statement

### AMENDED 5/5/20

#### REASON FOR AMENDED GUIDELINE STATEMENT MAY 5, 2020

In light of continually evolving knowledge of COVID-19 infection, including lethal cases, the CAP Autopsy Committee is issuing this amended guideline statement regarding postmortem evaluation of suspected or confirmed COVID-19 decedents. This amended guidance removes ambiguous language and stresses compliance with current guidelines which will facilitate safe and effective autopsy performance in the setting of COVID-19

### BACKGROUND

While the CAP Autopsy Committee resolutely supports the performance of autopsies as part of routine pathology practice, it is clear that autopsies take on added significance in the setting of emerging infectious diseases (EID) such as Coronavirus Disease 2019 (COVID-19). The autopsy can provide invaluable information about the pathophysiology of a disease that will ultimately guide therapy and assist those engaged in direct patient care.

While all autopsies involve risks of potential injury and infection, the committee recognizes the elevated risk involved in performing EID autopsies. Such risk being acknowledged, the CAP Autopsy Committee endorses the engineering control recommendations and personal protective equipment (PPE) provided by the Centers for Disease Control and Prevention (CDC); these guidelines are available at <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-postmortem-specimens.html>. In particular, the committee recommends that autopsies on known or suspected COVID-19 decedents be performed in facilities that meet the minimum engineering control recommendations set forth by the CDC (i.e., negative pressure autopsy suite) and by staff who appropriately utilize the recommended PPE during the procedure. It is up to each site performing autopsies to determine if and how it will open the head and remove the brain for evaluation, taking into consideration procedural recommendations from the CDC and/or individual institutional experience with other autopsies on infected decedents.

The CAP Autopsy Committee stresses that today's pathology trainees should actively participate in all aspects of their institution's response to the COVID-19 pandemic, including morgue operations and autopsies if they are performed, as such engagement presents a non-replicable opportunity to acquire unique skills that will enable them to manage potential future pandemics.

The CAP Autopsy Committee recommends that each pathology department create its own policy regarding autopsy performance during the COVID-19 pandemic, in conjunction with its relevant institutional administration. The committee recommends that an institution's decision regarding performing autopsies on known or suspected COVID-19 decedents be made in partnership with pathology leadership, including those regularly involved with autopsy care at the institution. Furthermore, such a decision should only be rendered after thoughtful consideration of the CDC guidelines and assessment of the institution's ability to comply with them. The CAP Autopsy Committee



acknowledges that some institutions have experienced critical shortages of PPE and have had to restrict the use of available items such as N95 respirators to staff involved in acute patient care; in such circumstances it is worth noting that there are alternatives to use in place of disposable N95 masks, such as powered air purifying respirator (PAPR) units, and institutions are now adopting decontamination methods for N 95 respirators (see <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>).

The CAP Autopsy Committee recommends that institutions deciding to partially or completely suspend autopsy services make an effort to identify local resources that can provide vital autopsy services for decedents' families, healthcare providers and public health officials. Such resources can be located through the [CAP list of private autopsy providers](#), state pathology societies, and local teaching institutions. The committee also recommends that any decision to suspend autopsy services by institutional administration is reassessed on a regular basis, as our understanding of and response to COVID-19 rapidly changes.

Some current recommendations for those individuals and/or institutions that can safely and effectively perform autopsies on suspected or confirmed COVID-19 decedents are below. These are interim guidelines subject to change as more data regarding this disease are generated. *Please consult relevant institutional procedures and/or policies or referenced websites for the most current and accurate information where appropriate.*

#### **REPORTING/SCREENING/CONSENTING OF CASES**

- Collecting accurate epidemiologic data is critical in any pandemic. All positive (POS) and person under investigation (PUI) COVID-19 cases should be reported to the appropriate entity (e.g., department of health) as dictated by institutional policy. This should include reporting of antemortem COVID-19 test results that are received after death as well as results of postmortem COVID-19 testing if it is performed.
- In some jurisdictions, autopsies on POS and PUI cases need to be referred to the medical examiner/coroner. These local requirements may change throughout the course of the pandemic and regular communication with the medical examiner/coroner is recommended.
- Medical records of ALL cases being considered for autopsy, regardless of clinical COVID-19 status, should be screened for the most recent clinical features of COVID-19 infection (see CDC guidance for most updated criteria) BEFORE autopsy performance. Communication with the clinical care teams is STRONGLY recommended, as it is for all autopsies.
  - For autopsies on patients with unknown COVID-19 status, if an institution has adequate test kits and testing facilities, COVID-19 testing should be performed to ascertain the decedent's COVID-19 status prior to performing the autopsy. This is referred to as a staged autopsy by the Royal College of Pathologists.<sup>5,6</sup>
- All autopsies should be consented per normal institutional procedures. Any autopsy restrictions implemented due to POS or PUI status, and delays related to pending COVID-19 test results, should be discussed with the individual(s) providing consent. Consent may also be obtained prior to COVID-19 postmortem testing.
- Institutions that usually only allow in-person or facsimile-transmitted autopsy consents should consider easing such restrictions to allow for telephone consent; this will facilitate acquisition of consent in areas where the movement of people is limited or restricted due to the pandemic.



### **BIOSAFETY CONSIDERATIONS**

- Comply with current CDC guidelines for postmortem COVID-19 testing and autopsy procedures (<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-postmortem-specimens.html>). The CDC consultation hotline may also be a helpful resource (770-488-7100).
- Each pathology department performing autopsies should be familiar with the engineering aspects of its autopsy facility; those pathology departments performing autopsies on suspected or confirmed COVID-19 decedents should ensure compliance with the CDC-recommended engineering controls (e.g., negative pressure to surrounding areas, number of air exchanges per hour, etc).
  - For autopsy performance on COVID-19 positive cases, CDC recommends use of an airborne isolation room or suitable alternative; for PUI cases, a staged autopsy may be performed awaiting results of postmortem COVID-19 testing, or the case may be treated as a positive case.
  - Confirm the **functional** status of recommended engineering controls, including negative pressure of airborne isolation room or autopsy suite and number of air changes per hour (ACH); any testing or modifications should be carried out in consultation with an institution's bioengineering department.
- Ensure adequate availability and proper use of PPE as recommended by CDC.
  - Document updated fit testing for all personnel involved with autopsy for N95 respirators as per OSHA respiratory protection standard.
  - Recommend updated training on proper use of PPE for all individuals performing autopsies.

See <https://www.osha.gov/coronavirus/control-prevention#deathcare>

- Asses the need for and procure as needed any equipment that is necessary to perform autopsy procedures in compliance with CDC guidelines, including its recommendation to limit aerosol production. Examples include but are not limited to hand shears for opening the rib cage and vacuum shrouds and/or physical barriers if oscillating saws are used to open the head.

### **AUTOPSY PERSONNEL**

- Autopsies on infected decedents should be performed using the minimum number of personnel necessary to safely and competently perform the procedure.
- All personnel present during a COVID-19 autopsy should be recorded and this information kept in the pathology department for future reference if needed for contact tracing.
- In general, observers/students should be trained in safety precautions prior to participating in autopsies of infected and potentially contagious decedents.

### **AUTOPSY PERFORMANCE**

- The CAP Autopsy Committee supports performance of autopsies on suspected or confirmed COVID-19 decedents in a manner that mitigates risk and maximizes educational value for the next-of-kin, those caring for the deceased, and the community at large.
- The CAP Autopsy Committee supports adherence to current CDC guidelines for acquiring specimens from the respiratory tract as well as other major organ systems.
- The autopsy should be performed with knowledge of the decedent's clinical history; this will facilitate appropriate sampling and ancillary studies in order to better understand the pathogenesis of COVID-19 illness. As most patients present with respiratory tract symptomatology, respiratory sampling as recommended by CDC is appropriate, but other clinical situations that can be evaluated at autopsy continue to evolve. Examples include, but are not limited to:



- COVID-positive patients are experiencing high rates of acute kidney injury, proteinuria and hematuria;<sup>8</sup> consider saving renal tissue for ultrastructural studies in these clinical situations.
- High rates of clinically apparent myocardial injury, but low reported rates of myocarditis are reported in patients with fatal COVID-19 infection. Ongoing detailed cardiovascular examination, generous myocardial sampling, and possible storage of tissue for viral studies is continued to be recommended.<sup>9, 10</sup>
- The autopsy should be performed in a manner that thoroughly evaluates and documents any co-morbidities as these are being increasingly identified as critical in a majority of deaths related to COVID-19<sup>10</sup>; examples include but are not limited to obesity, hypertensive cardiovascular disease, and diabetes mellitus. Co-infections should also be sought for and documented.
- The CAP Autopsy Committee supports the use of COVID-19 autopsy material in the context of IRB-approved research protocols that are appropriately consented for and which protect patient confidentiality.
- The CAP Autopsy Committee supports the development of global resources to store and share data on the pathology of COVID-19 disease in a HIPAA-compliant fashion; a list of these resources will be compiled by the committee as they evolve, to be shared on the CAP website.

## REFERENCES

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**Additional resources**

- For a complete list of COVID-19 related articles in the Archives of Pathology & Laboratory Medicine see <https://meridian.allenpress.com/aplm>
- COVID Autopsy Listserve: Contact Alex K. Williamson, MD, FCAP at