COLLEGE of AMERICAN PATHOLOGISTS

COVID-19 AUTOPSY GUIDELINE STATEMENT FROM THE CAP AUTOPSY COMMITTEE

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 a risk of injury and infection, the committee recognizes the additional risk involved in the performance of EID autopsies. **The Autopsy Committee recommends that *ONLY* individuals properly trained in performing EID autopsies, and with adequate personal protective equipment (PPE) and appropriate facilities, perform autopsies on patients with known or suspected COVID-19.** The committee endorses the recommendations for facilities and PPE offered in the CDC guidelines at https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-postmortem-specimens.html.

Some obstacles to COVID autopsy performance include the fact that even with the proper personnel, equipment, and facilities, the risk of possible infection can be mitigated but not eliminated. Also, some hospitals 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. A further complication in the case of COVID-19 is the unknown rate of asymptomatic carriage. Published estimates of the asymptomatic carriage are in the range of 18%[1] to 30%[2] with some authors suggesting even higher rates.[3] A preliminary report from China found that 59% of patients who tested positive were either asymptomatic or mildly symptomatic.[4] The lack of a suspicious clinical history does not guarantee that a patient is free of the novel coronavirus. Added to this are the wide regional differences in the prevalence of the virus in the community.

In the face of these risks and uncertainties and the infrastructural demands of the COVID pandemic, some hospitals have made the decision to temporarily suspend the performance of all autopsies. The Autopsy Committee recommends that this decision be made in partnership with pathology leadership and *those directly involved in autopsy care* and that it be rendered only after thoughtful consideration of CDC guidelines, complete review of the engineering aspects of autopsy facilities, viral testing ability, and true PPE needs. There are alternatives to use of disposable N 95 masks such as the use of powered air purifying respirator (PAPR). In addition, institutions are now adopting decontamination methods for N 95 respirators (https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html).

The Autopsy Committee recommends that each pathology department create its own written policy regarding autopsies performed during the COVID-19 pandemic in conjunction with its hospital administration. Even if a pathology department is willing and has the appropriate staff, equipment, and administrative support to perform COVID-19 autopsies, **the Autopsy Committee recommends that direct participation be limited to adequately trained personnel. The Autopsy Committee also 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 performance**

of autopsies, 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 institutions suspending COVID-19 positive or suspect autopsies or even general autopsy service during the COVID-19 pandemic make an effort to find local institutions (local teaching universities) or local autopsy practitioners to offer alternative venues for continuing the vital work of autopsy examination. We recommend use of the CAP list of private autopsy providers, investigation through state pathology societies, and contact with local teaching hospitals to find local resources. We also recommend the re-evaluation of any decision to suspend autopsy service with hospital administration on an almost daily basis, as local health care demands change through the evolution of the pandemic.

What follows are current recommendations for those individuals and institutions that have made the decision in the setting of adequate resources (including PPE), infrastructure, and trained personnel to perform autopsies in the situation of a known COVID-19 infection (POS) or in persons under investigation (PUI). These are interim guidelines subject to change as more data regarding this disease are generated.

REPORTING/SCREENING/CONSENTING OF CASES

- Accurate epidemiologic data is critical. All POS and PUI should be reported to the appropriate entity as dictated by the hospital's policy. This includes reporting of COVID test results received postmortem.
- In some jurisdictions, autopsies on POS and PUI need to be referred to the medical examiner/coroner. This requirement may change locally throughout the course of the pandemic and regular communication with local medical examiner/coroner is recommended.
- The medical records of ALL cases presenting for autopsy, regardless of clinical COVID-19 status, should be screened for the most recent clinical features of COVID-19 infection (see CDC.gov for most updated criteria) BEFORE autopsy performance. Communication with the clinical care teams is STRONGLY recommended, as it is for all autopsies.
    - In cases of autopsies on patients with unknown COVID-19 status, if your hospital has adequate test kits and testing facilities, COVID testing should be performed to ascertain status prior to performing the autopsy. This is referred to as a staged autopsy by the Royal College of Pathologists.[5,6]
- 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 test results, should be discussed with the individual(s) providing consent. Consent may also be obtained prior to COVID-19 postmortem testing.
    - Institutions that restrict consent to in person or fax only may consider easing these restrictions to allow for telephone consent to facilitate acquisition of consent in areas where the movement of people is limited or restricted.

BIOSAFETY CONSIDERATIONS

- Follow all updated CDC guidelines for postmortem COVID-19 testing and autopsy procedures. (https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-postmortem-specimens.html); also CDC consultation hotline (770-488-7100)
- Become familiar with engineering aspects of your autopsy facility to determine compliance with CDC recommended engineering controls:
    - For autopsy performance on COVID-19 positive cases CDC recommends use of an airborne isolation room or equivalent; 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 engineering controls including negative pressure of airborne isolation room or autopsy suite; and number of air changes per hour (ACH) as per CDC guidelines.
        - Communication with the bioengineering department of your institution is strongly recommended prior to performing COVID-positive cases.
- Ensure adequate PPE availability as recommended by CDC and OSHA.
    - Document updated fit testing for all personnel for N 95 respirators as per OSHA respiratory protection standard (https://www.osha.gov/SLTC/respiratoryprotection/) (https://www.osha.gov/SLTC/covid-19/standards.html)
    - Recommend updated training on proper use of PPE for all individuals performing autopsies. (https://www.osha.gov/SLTC/covid-19/standards.html)
- As CDC recommends limiting aerosol generating procedures at autopsy in COVID-19 cases, determine equipment needed to perform autopsies in this fashion. This may include, but is not limited to, hand shears for opening the rib cage and vacuum shrouds if oscillating saws are used.

AUTOPSY PERSONNEL

- Autopsies in highly infectious cases should be performed using the minimum number of personnel necessary to safely perform them.
- DO NOT allow observers/students to participate in these autopsies.
- Residents may participate in these autopsies at the discretion of the institution, the residency program director and the individual resident. The decision should be based, at a minimum, on the resident's documented autopsy experience, ability of attendings to supervise the resident, and the resident's documented training in appropriate use of PPE. Other individual and institutional factors may also be considered.[7]
- Autopsy technicians/PAs assisting with these autopsies should be directly supervised by the attending pathologist and should be appropriately informed of the biohazards associated with performing autopsies on POS/PUI, be appropriately trained and fitted for PPE, and wear PPE appropriate to the level of their exposure.
- The CAP Autopsy Committee strongly supports the recording of the personnel present during the autopsy procedure as recommended by the CDC.

AUTOPSY PERFORMANCE

- The CAP Autopsy Committee supports performance of autopsies on COVID-19 positive or suspect cases 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 following the current CDC guidelines for acquiring specimens from the respiratory tract as well as other major organ systems.
- The autopsy should also be performed with knowledge of unique presentation of the deceased with appropriate sampling and ancillary studies to better understand the pathogenesis of the presentation. As most patients present with respiratory tract symptomatology, respiratory sampling as recommended by CDC will be appropriate but other clinical situations are evolving. Examples include:
    - COVID-positive patients are experiencing high rates of acute kidney injury, proteinuria and hematuria,[8] consider saving renal tissue for fluorescence and ultrastructural studies in these clinical situations.
    - High rates of clinically apparent myocardial injury in patients with fatal COVID-19 infection would warrant detailed cardiovascular examination and generous myocardial sampling and possible storage of tissue for viral studies.[9]
- The autopsy should also be performed in a manner to completely document co-morbidities that may have been previously documented or undocumented.
- The CAP Autopsy Committee supports the use of COVID-19 autopsy material for IRB approved research while protecting patient confidentiality and in the context of appropriate consent.
- The CAP Autopsy Committee supports the development of global resources to store and share data on the pathology of COVID-positive autopsies in HIPAA compliant fashion. A list of these resources will be complied by the committee as they evolve, to be shared on the CAP website.

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