Autopsy Findings with Severe Coronavirus Infection

General Information
2019 novel coronavirus (2019-nCoV) is in a family of viruses causing respiratory infections. Some coronaviruses cause generally mild cold-like illnesses; these viruses can be detected by clinical respiratory panels. 2019-nCoV was identified in December, 2019, and is the third coronavirus causing severe illnesses. Severe acute respiratory syndrome (SARS) caused an outbreak in 2002-2003. Middle East respiratory syndrome (MERS) was identified in 2012 with continued cases. Limited clinical information is available about 2019-nCoV, so SARS and MERS are being used as models.

For 2019-nCoV cases use standard autopsy personal protective equipment (PPE) including scrub suit, impervious gown or apron, eye protection (i.e., goggle, face shield), double surgical gloves with an interposed layer of cut-proof synthetic mesh gloves, surgical mask or respirator, and shoe covers. Add respiratory protection if aerosols might be generated: N-95 or N-100 disposable particulate respirators or PAPR. When available, use vacuum shrouds for oscillating saws. Remove and dispose of PPE in appropriate manner. Use biosafety cabinets for handling and examination of smaller specimens.

Autopsy Findings (from Gu)
Respiratory tract pathology in SARS includes:

- Severe lung consolidation, edema, and hepatization
- Diffuse alveolar damage (phases: acute exudative inflammatory; fibrous proliferative; fibrotic)
- Varying acute exudative features including edema, hyaline membranes, organization, fibrosis
- Macrophagic or mixed cellular infiltration
- Multinuclear giant cells
- Atypical reactive pneumocytes
- Vascular injury
- Can be secondary bacterial bronchopneumonia

Diffuse alveolar damage is not unique to SARS. Suggestive findings are: (from Guo)

- Prominent consolidation, edema and hyaline membrane formation
- Inflammatory cell infiltrates of SARS pneumonia are paucicellular or absent
- Extensive vascular endothelial injury and damage

Other findings with SARS

- Spleen: lymphocyte depletion, architectural disruption
- Digestive tract: depletion of mucosal lymphoid tissue
- Urogenital: kidneys with acute tubular necrosis in varying degrees
- Brain: edema and degeneration of neurons
- Bone marrow: may have reactive hemophagocytosis

Resources
Report suspect cases to the local health jurisdiction:
https://www.doh.wa.gov/AboutUs/PublicHealthSystem/LocalHealthJurisdictions
Washington State Department of Health: https://www.doh.wa.gov/Emergencies/Coronavirus
Autopsy PPE: https://www.cdc.gov/sars/guidance/I-infection/laboratory.html