H27 The Identification of Unrecognized COVID-19 Deaths by Nasopharyngeal Swabs at Funeral Homes

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Learning Overview: The goal of this presentation is to demonstrate the role of the medical examiner to diagnose deaths due to Novel Coronavirus (COVID-19) Respiratory Infection.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the ability of the medical examiner to identify previously undiagnosed COVID-19 deaths and the benefits of such testing to contact tracing and mortality surveillance, in collaboration with public health partners.

Medical examiner/coroner jurisdictions are required to investigate deaths that pose a threat to public health and safety. Historically, medical examiners have identified and/or monitored and recorded deaths due to a variety of novel infectious outbreaks, including Hanta virus, West Nile virus, and novel H1N1 viral infections. Novel Coronavirus (COVID-19) respiratory infection has caused over 4,500 deaths in Connecticut from March 17 to October 1, 2020. Most deaths occurred at hospitals (53%) and were readily diagnosed and properly certified. COVID-19 deaths that occurred at skilled nursing facilities (42%) and residences (3%) were more of a challenge to diagnose accurately due to the unavailability of viral testing and/or confounding medical illnesses.

The Connecticut Office of the Chief Medical Examiner (OCME) is a single-facility, centralized, state-wide medical examiner system serving a population of approximately 3.6 million people with 31,000 deaths per year. The OCME investigates all sudden, suspicious, and unexpected deaths, which includes threats to public health and safety, as well as deaths in which the remains will be cremated. Approximately 70% of all deaths in Connecticut are investigated by the OCME in some manner. Deaths reported to the OCME from March 17 to October 2020, in which COVID-19 infection was suspected but not previously diagnosed, were triaged to receive a postmortem nasopharyngeal swab at the funeral home.

The investigative staff of the OCME performed 175 postmortem, nasopharyngeal swabs at funeral homes to test for COVID-19. Of these 175 decedents, 110 had SARS-Cov-2 target sequences unique to the coronavirus disease 2019 (COVID-19) detected using the Real-Time JAX COVID-19 RT-PCR assay (Jackson Laboratory, Farmington, CT). Results were generally available within six hours of receipt by the laboratory. The locations of pronouncement of death of these 110 deaths were: skilled nursing facility 61 (56%), private residence 35 (32%), hospital 7 (6%), assisted living home 6 (5%), and hospice 1 (1%).

Of these 110 COVID-19 deaths, 47 initially had been certified as <u>non</u>-COVID-19 deaths and 34 initially were certified as “suspected,” “exposure to,” “possible,” or “rule out” COVID-19. Of these 81 deaths, 64 occurred at skilled nursing facilities (59) and assisted living homes (5). Of the 175 deaths, 46 were reported to the OCME by funeral directors, of which 41 had positive COVIID-19 swab results. Of these 41, all were from skilled nursing homes (36) or assisted living homes (5), and 37 had been diagnosed as COVID-19 deaths by OCME investigations triggered by cremation requests from funeral directors. The remaining four were reported at the request of the next-of-kin. There were 26 positive deaths that occurred at private residences and all were reported to the OCME by the local police department. The OCME issued 107 death certificates for these 110 decedents. Three deaths were certified appropriately due to COVD-19; however, the death certification was received after the OCME had started the investigation.

There are several benefits to diagnosing and confirming these COVID-19 deaths. First, it provides essential information to the caregivers, families, roommates, and first responders who have been in contact with the infected patient, resulting in appropriate self-quarantine and containment measures. Next, it provides information at the local and state level to public health partners for contact tracing activities. Finally, and importantly, it improves the accuracy of death certification during a pandemic, ensuring that mortality data has solid value and applicability from the town to the state to the nation and the world. Many of these deaths were identified through the cremation review process and involved deaths at skilled nursing facilities. This initial reporting and surveillance deficiency may be improved by having skilled nursing facilities report all deaths to medical examiners/coroners. This additional quality assurance measure may also help to recognize subsequent outbreaks of infectious diseases at these facilities more quickly. Maintaining open and professional communications with funeral directors is vital as they are valuable colleagues and important surveillance partners. Obtaining nasopharyngeal swabs before embalming is ideal, and, therefore, the timeliness of identifying the suspected case and notifying the funeral director to delay embalming is key.

Coronavirus (SARS-CoV-2, COVID-19), Nasopharyngeal Swabs, Death

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