

H24 COVID-19 Suspected Deaths Certified by the Florida District 2 Medical Examiner's Office: Causes of Death and Pre-Existing Medical Conditions

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Learning Overview: The goal of this presentation is to disseminate information regarding the causes of death and the most common pre-existing medical conditions identified in COVID-19 suspected deaths certified by the Florida District 2 Medical Examiner's Office.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by contributing to the body of knowledge regarding the pre-existing medical conditions that may convey an increased risk of death from a SARS-CoV-2 infection.

Background: COVID-19 is a highly contagious, predominately respiratory illness caused by the coronavirus SARS-CoV-2. Symptoms range from asymptomatic or mild to severe, with higher risk for complications or death in older adults and people of all ages with certain underlying medical conditions. After report of the first case in Wuhan, China, in December 2019, the first death followed quickly in January 2020. COVID-19 was classified as a global pandemic in March 2020. More than one million global deaths, and more than 210,000 United States deaths, have been attributed to COVID-19. In Florida, all deaths in which COVID-19 is suspected to have contributed must be certified by the district Medical Examiner's Office (MEO) in which the death occurred. Starting with the first such death in this district, all COVID-19 suspected deaths were certified after an investigation that included a review of available medical records. In addition, for each death, a Disaster Death Report (DDR) was prepared by the certifying board-certified forensic pathologist, which included demographic information, a summary of the medical/social history, the cause(s) of death, contributing conditions, and manner of death.

Methods: The DDRs for all COVID-19-suspected fatalities certified by the district MEO between March 17 and August 17, 2020, were reviewed. Reported demographic information (age, race, and sex), manner of death, Immediate and Underlying Causes Of Death (ICOD and UCOD, respectively), contributing conditions, and pre-existing medical conditions were tabulated. Results were analyzed for prevalence and tallied (reported as nearest 1%).

Results: Of 117 COVID-suspected deaths investigated, COVID-19 was certified as having contributed to death in 114 (97%). Among the COVID-19-related deaths, there were 60% males and 40% females. Ages ranged from 19 to 105 years (mean—68 years, 7 months; median—70 years). The racial distribution was 51% Caucasian/White, 42% African American/Black, and 7% Hispanic/Latino. Prior to infection with SARS-CoV-2, 37% were residents and 3% were workers in a group living setting. Manner of death was Natural in 99%. COVID-19 was the ICOD ($N=4$) or UCOD ($N=104$) in 95% of cases and a contributory cause of death in 5%. COVID-19 syndrome or complications of COVID-19 was the ICOD in 4% (no UCOD specified). In the remaining 96% which designated COVID-19 as the UCOD, pulmonary conditions were overwhelmingly certified as the ICOD. In 76% of cases, respiratory failure was the ICOD and COVID-19 the UCOD, with 53% of these cases attributing respiratory failure to pneumonia or pneumonitis and 1% attributing it to Congestive Heart Failure (CHF) exacerbation. Other pulmonary ICODs included pneumonia (3%), acute respiratory distress syndrome (2%), respiratory infection (1%), and sepsis due to pneumonia (1%). Multisystem disorders included multisystem organ failure (2%) and inflammatory response (1%). Coagulation-related ICODs included intracerebellar hemorrhage, retroperitoneal hematoma, hemorrhagic complications, and acute cerebral stroke (each 1%). Cardiac ICODs (each 1%) consisted of acute myocardial infarction and sudden cardiac death (with CHF the UCOD and COVID-19 contributory). Failure to Thrive was the ICOD in 8% with UCODs of COVID-19 (44%), multiple comorbidities (33%), and metastatic melanoma (11%). The most prevalent contributing and pre-existing medical conditions in COVID-19-related deaths included hypertension (80%), diabetes mellitus (52%), obesity (32%), lipid disorders (31%), dementia (18%), chronic obstructive pulmonary disease (18%), atrial fibrillation (18%), coronary atherosclerosis (17%), CHF (16%), chronic kidney disease (16%), thyroid disorders (11%), chronic anemia (9%), previous strokes (9%), gastroesophageal reflux disease (9%), obstructive sleep apnea (8%), previous cancer (7%), urinary tract infection (6%), tobacco use (5%), dysphagia (5%), and schizophrenia (5%). An additional 45 pre-existing medical conditions with lower prevalence were also identified.

Conclusion: COVID-19-related deaths in this district show predominately respiratory causes of death in older adults. Pre-existing medical conditions were common in this cohort, with the most prevalent including hypertension, diabetes, obesity, and hyperlipidemia; however, numerous additional pulmonary, cardiac, neurocognitive, endocrine, renal, neoplastic, and other disorders were also identified.

COVID-19, Cause of Death, Pre-Existing Medical Conditions