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and why will allow us to develop outreach strategies and ensure that those in need of rapid assessment and treatment will continue to seek it, preventing downstream morbidity and mortality.

5 Burden of Out of Hospital Cardiac Arrest in New York City during the COVID-19 Pandemic

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Study Objectives: As of June 10, 2020, there have been 17,300 confirmed and an additional 4,693 suspected COVID-related-deaths in New York City (NYC). While much attention was given to the overwhelming burden on hospitals and skilled nursing facilities during the pandemic, it is less well known how the pandemic impacted EMS systems and rates of out-of-hospital cardiac arrest (OOHCA). The NYC Regional Emergency Medical Advisory Committee (REMAC) is responsible for oversight and quality in out-of-hospital care in NYC. This study’s primary objective was to assess the burden of cardiac arrest in during the pandemic.

Methods: This observational study uses aggregate data from the New York City region collected through the National EMS Information System (NEMSIS). Daily counts of cardiac arrest incidents stratified by each of the five boroughs (geographical divisions) in NYC, and by final disposition (eg, transported to the hospital or pronounced on scene) were obtained for the time periods of February 2020 through April 2020, and for the same time period in the final year. Descriptive statistics were used to describe and compare the daily counts of cardiac arrests and the proportion of patients pronounced in the field between the current year during the pandemic time period and the corresponding time period in 2019. This study was determined to be exempt by the Mount Sinai Institutional Review Board.

Results: In NYC during the COVID-19 pandemic, EMS experienced a 220% increase in cardiac arrest call responses in February - April, 2020 (8,837) compared to February 2019 (4,022), peaking on April 6 at 330 cases in a single day. (See Figure 1). During this period, the Bronx experienced the highest rate of increase at 243% higher in 2020 compared to Queens (238% increase), Kings (231%), New York (184%) and Richmond (143%). For all of NYC, the rate of transport for OOHCA decreased during this time period from 37% in February-April 2019 to 16% in February-April 2020.

Conclusion: There was exponential growth of the rate of OOHCA during the initial phase of the pandemic in NYC and there was a sustained increase through the month April 2020. With a 220% increase in cases over the course of three months and over a 780% (42 to 330 cases) increase on the highest day of OOHCA, and in light of a concurrent burden on NYC hospitals, our EMS system experienced an unprecedented demand for critical care and resuscitation. Further studies are needed to better understand to what degree the increased in OOHCA was attributed to the disease itself, or due to delaying needed care for other conditions. In planning for future pandemics, strategic planning should include consideration of impacts on operations and capacity of the regional EMS system.

6 Lung Ultrasound versus Chest X-ray for the Diagnosis of COVID-19 Pneumonia

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Study Objectives: The viral illness severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), more commonly known as coronavirus 2019 (COVID-19), has become a global pandemic infecting over 2 million individuals worldwide. Symptoms are often vague and physical exam findings have proven unreliable as indicators of infection. Therefore, diagnosis typically relies on imaging or nasopharyngeal swabs. The objective of this study was to compare point-of-care lung ultrasound (LUS) with chest x-ray (CXR) to determine which is the more accurate diagnostic imaging modality for diagnosing COVID-19 pneumonia.

Methods: This was a single-center, prospective, cohort study at an urban university hospital with >105,000 patient visits annually. Patients >18 years old, who presented to the emergency department (ED) and with signs and symptoms of COVID-19, were eligible for enrollment. Each patient received a LUS performed by an emergency medicine resident or emergency physician (EP), using a portable, handheld ultrasound and a portable AP CXR after the LUS was completed. High-risk patients or those with an abnormal imaging finding underwent a non-contrast-enhanced computed tomography (NCCT) as the diagnostic standard. The primary outcome was the sensitivity of LUS and of CXR at identifying COVID-19 pneumonia against NCCT as the reference standard. Using a power analysis of 80%, our sample size calculation of 98 patients was based on previous data demonstrating a 20% difference in sensitivities between LUS and CXR at diagnosing pneumonia. Data are presented as proportions with 95% confidence intervals (CIs). Data analysis included the chi-square and t tests.

Results: 143 consecutive patients with signs and symptoms of COVID-19 were approached and enrolled. 27 patients were considered low risk by the attending EP per ED guidelines, and 6 patients were admitted for alternate diagnoses without advanced imaging. 110 patients underwent LUS, CXR, and NCCT. 99 LUS and 73 CXRs were interpreted as positive. 81 NCCTs were interpreted as positive providing a prevalence of COVID-19 pneumonia of 75% (95% CI 66.0-83.2) in our study population. Sensitivity of LUS was 97.6% (95% CI 91.4-99.7) vs 69.9% (95% CI 58.8-79.5) for CXR. Specificity was 33.3% (95% CI 16.5-54.0) for LUS and 44.4% (95% CI 25.5-64.7) for CXR. LUS positive and negative likelihood ratios were 1.46 (95% CI 1.12-1.92) and 0.0723 (95% CI 0.010-0.31), respectively vs 1.26 (95% CI 0.87-1.81) and 0.67 (95% CI 0.39-1.16) for CXR. PPV and NPV for LUS were 81.8% (95% CI 72.8-88.9) and 81.8% (95% CI 48.2-97.7) compared to 79.5% (95% CI 68.4-88.0) and 32.4% (95% CI 18.0-49.8) for CXR.

Conclusions: LUS was more sensitive than CXR at identifying COVID-19 pneumonia. LUS using a portable, handheld ultrasound can be a valuable triage screening modality for patients with suspected COVID-19 pneumonia in diverse clinical settings.

7 Failure Rates during Reuse of Disposable N95 Masks in Clinical Practice in the Emergency Department

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Study Objectives: The COVID-19 pandemic caused a worldwide shortage of personal protective equipment, specifically disposable N95 respirators, prompting health care entities to extend the use of these masks beyond their intended single-use manufacturer recommendation with a paucity of supporting research. We sought to explore the failure rate when reusing single-use N95 respirators through repeated fit testing in an emergency department (ED).

Methods: We performed a prospective cohort study of ED personnel ("subjects") required to use respirators at an academic, level one trauma center. All investigators performing fit testing reviewed OSHA qualitative fit test guidelines and training and were familiar with the testing protocol. All subjects had been previously fit tested and assigned an appropriately sized N95 mask by employee health per hospital protocol. Subjects who failed initial fit testing and those who declined to participate were excluded. Per study protocol, subjects were fit tested periodically throughout their