Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Conclusion: Our study confirms early reports of a higher mortality in patients intubated for severe COVID-19 infection and higher rates of respiratory failure related to COVID-19 in African American patients. However, intubated survivors in our hospital system were more often younger and African American. More work is needed to clarify what physiological and socioeconomic factors are associated with severe COVID-19 infection and outcome.

229 Simulation-Based Mastery Learning for Ultrasound-Guided IV Insertion Improves CT Contrast Extravasation Rates in the Emergency Department

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Study Objectives: Computerized tomography (CT) with intravenous (IV) contrast have become an indispensable component of evaluation and management in the emergency department (ED). Contrast extravasation (CE) is a known complication of contrasted CTs, and results in direct patient morbidity, delays in care, and increased costs. Therefore, patients needing CTs with IV contrast require a reliable point of IV access. For patients with difficult IV access (DIVA), ultrasound guided peripheral IV (USGPIV) insertion is increasingly relied upon to establish IV access for critical studies. However, prior studies have shown rates of CE up to 4x higher with USGPIV compared to traditional IV. While high CE rates may be presumed to be inherent to USGPIVs, these events may instead be related to lines placed by providers with limited and non-standardized training in USGPIV insertion. Simulation-based mastery learning (SBML) provides a potential solution to this training problem. SBML is an extreme form of competency-based training that ensures all learners meet a predetermined mastery standard when objectively tested. SBML has been shown to be highly effective for procedural training in physicians, but has been underutilized in interprofessional education. Our objective was to establish a rigorous SBML USGPIV curriculum for emergency nurses (ENs) to determine if USGPIVs inserted by ENs in patients with DIVA would result CE rates comparable to pre-intervention standards, and if CE events differed between USGPIV inserted by ENs vs non-SBML-trained physicians or advanced practice providers (APP).

Methods: We trained 21 ENs using a SBML curriculum in USGPIV insertion from September 2019 to May 2020 at an urban, academic ED. Subsequently, data was prospectively collected on all patients who underwent USGPIV insertions, and any CE events that occurred. Prior to initiating our curriculum no ENs were trained or permitted to insert USGPIVs, therefore September 2018 through August 2019 served as the pre-intervention comparison. The baseline CE event data from the pre-intervention period was obtained from a database collected and maintained independently by the radiology department. We compared CE events between the control and intervention periods. We also compared the extravasation attributable to MD/APP vs ENs since our initiative began.

Results: During the pre-intervention period there were 9249 contrast-enhanced CT studies with 67 CE events, (baseline CE event rate of 0.72%). During the intervention period, ENs inserted 737 USGPIVs with a total of 168 USGPIVs used for contrast enhanced CT with 1 CE (CE event rate of 0.6%). There was no statistical difference in CE rate for EN-placed USGPIVs compared with the pre-intervention rate. Since the intervention there have been a total of 20 CE events in our ED, of which MD/APP USGPIVs are responsible for 25% (n=5) while EN-placed USGPIV account for 5% (n=1), p=0.08.

Conclusion: Despite previous reports of high CE rates with USGPIV, SBML USGPIV training for ENs results in low CE rates which are similar to previously established institutional standards. When comparing USGPIVs placed by MD/APPs and ENs, there are likely important differences in rates of CE, which may be related to differences in procedural training. Increasing attention should be paid to the quality of USGPIV training to prevent these deleterious patient outcomes.

230 Mortality Associated With COVID-19 among ED Patients in Southeast Michigan

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Study Objective: Recent data suggest that comorbidities could explain race-related differences in health outcomes related to coronavirus disease 2019 (COVID-19). Further data is needed on the relationship between race, comorbidities, and mortality due to COVID-19. Our objective was to measure the adjusted association between race, comorbidities, and mortality due to COVID-19.

Methods: A retrospective cohort study of all patients who had Covid-19 confirmed by PCR for SARS-CoV-2 and presented to one of 9 EDs within an integrated health system that cares of a racially diverse population. Patients’ first encounter was included for analysis between the dates of March 7 and April 30, 2020. Through an established Covid-19 data registry that was cross-validated, we collected demographic information, Charlson comorbidities, data on obesity, insurance information, and info on low-income residential areas. Outcome assessment was complete through May 31, 2020 and included cross-checking all deaths with a state-level health information exchange. We used multivariable logistic regression to build 2 a priori models: (1) measuring association between death with demographic, socioeconomic, and comorbidities and (2) addition of ED laboratory, respiratory vitals, and oxygen treatment to model 1.

Results: There were 3,674 included patients with an average age of 58.6 ± 18.1 years. A majority were female (1,972, 53.7%) and 2,040 (55.5%) were black, non-Hispanic. The overall admission rate was 63.6%. Admission rate did not differ by race but was significantly higher if patients were age >60 years (82.0% vs. 46.8%), resided in a low-income area (66.2% vs. 60.8%), or had more than 2 comorbidities (90.6% vs. 55%). Unadjusted death rates were higher in white, non-Hispanic patients compared to black, non-Hispanics (16.4% vs. 9.9%) and in patients >60 years (21.3% vs. 3.0%) or with more than 2 comorbidities (27.8% vs. 6.6%). In adjusted analyses (Table 1), the presence of comorbidities and age >60 years were highly associated with 30-day death. Black, non-Hispanics had reduced odds of death compared to white non-Hispanic patients.

Conclusions: Similar to early reports on the epidemiology of Covid-19, ED patients with comorbidities, advanced age, and physiological abnormalities in the ED had higher odds of death. To our knowledge, this is the first data demonstrating lower adjusted odds of death among black, non-Hispanic patients.

| Table 1. Odds Ratios for 30-Day Mortality among 3674 Covid-19 Patients |
|-----------------------------|-----------------------------|
| Odds ratio (95% CI)         | Model 1                     | Model 2                     |
| Male sex                    | 1.62 (1.30 – 2.02)          | 1.3 (1.00 – 1.65)           |
| 2 or more comorbidities     | 3.29 (2.58 – 4.19)          | 1.94 (1.48 – 2.56)          |
| Resides in low income area  | 0.94 (0.73 – 1.20)          | 0.94 (0.72 – 1.24)          |
| Obesity                     | 0.94 (0.75 – 1.18)          | 0.89 (0.68 – 1.13)          |
| Black, non-Hispanic         | 0.67 (0.52 – 0.86)          | 0.66 (0.50 – 0.87)          |
| Age >60 years               | 4.19 (3.04 – 5.77)          | 3.02 (2.14 – 4.26)          |
| Commercial insurance        | 0.49 (0.39 – 0.65)          | 0.73 (0.50 – 0.99)          |
| Oxygen delivery in ED       | 2.93 (2.27 – 3.78)          | 2.93 (2.27 – 3.78)          |
| Respiratory rate >24/min    | 1.87 (1.45 – 2.43)          | 1.87 (1.45 – 2.43)          |
| Tropin >99 percentile       | 2.89 (2.38 – 3.81)          | 1.47 (1.01 – 2.13)          |
| Absolute lymphocyte < 1000u | 1.46 (1.33 – 1.61)          | 1.41 (1.33 – 1.61)          |
| Creatinine >1.5 mg/dl       | 1.26 (1.05 – 1.58)          | 1.26 (1.05 – 1.58)          |