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Research Forum Abstracts

169 Emergency Department Utilization Trends during the COVID-19
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Study Objectives: With COVID-19 cases and fatalities increasing globally, health officials implemented many policies and restrictions to slow the rate of infection. In California, a statewide stay-at-home order was issued on March 19, 2020. Subsequently, individuals avoided gatherings and public places, which potentially increased their risk of contracting the virus, including emergency departments. There is concern that delaying preventive and emergent care could have negative health consequences, especially among those managing chronic conditions and the elderly. The objective of this study was to assess patterns of ED utilization during the initial COVID-19 pandemic, as compared to utilization during the prior year.

Methods: We conducted a multi-center, retrospective study among adult patients (≥18 years) presenting to two emergency departments (urban level 1 trauma center and suburban academic hospital with combined annual census of ~83,000). We compared weekly ED utilization between two distinct time periods: March 1 to May 30 in 2019 (n=21,226 visits) and 2020 (n=15,927 visits). We calculated the percent change in ED utilization from 2019 to 2020 for each of the 13 weeks, assessing trends over time by patient age, sex, race/ethnicity, homelessness, presence of chronic conditions, and primary reason for ED visit.

Results: Compared to 2019, weekly ED volume and admissions in 2020 decreased by as much as 41.8% and 37.2%, respectively. While weekly ED volume in 2020 did not return to 2019 levels (-17.0% at the highest), admissions did (-0.8% at the highest). Patients 65-74 year of age saw the highest weekly decrease at 50.8% below 2019, and while weekly admissions also decreased for this group by up to 48.3%, admissions spiked to an average of 23.0% above the previous year during the last two weeks of the study period. On average, ED visits by females decreased in 2020 by 30.1%, compared to 20.2% for males. ED visits by Non-Hispanic Asians were at least 30% below the prior year for 9/13 weeks, compared to Non-Hispanic Blacks who only surpassed a 30% decrease during one week. ED volume was relatively unaffected among patients experiencing homelessness, with an average weekly decrease of 4.5%. Patients with diabetes saw a high of 45.1% decrease in admission compared to 2019, but were within 5% of the previous year during 3 of the final 4 weeks of the study period. Psychiatric-related visits and alcohol and substance-related visits decreased as much as 50.6% and 52.0%, respectively; however, alcohol and substance-related visits averaged only 6.8% below 2019 volumes during the last 4 weeks of the study period compared to -26.0% among psychiatric visits. Visits for skin and subcutaneous tissue infections decreased up to 44.4%, but also saw volume above 2019 levels for 5 different weeks (range +2.2% to +34.1%). Similarly, weekly sepsis-related and cardiac dysrhythmia visits were at least 15% higher than 2019 for 2 of the last 4 weeks, and, 3 out of the last 4 weeks, respectively.

Conclusion: This study of ED utilization trends during the COVID-19 pandemic demonstrated that ED volume and admissions decreased dramatically compared to the prior year. However, there was much variation among the patient population, and unfortunately elderly patients and those with chronic conditions may be paying the price for initially avoiding the ED. Further study with a longer follow-up period is needed to evaluate potential health consequences for patients who may be delaying care.

170 Use of Transthoracic Ultrasound to Confirm Placement of Resuscitative Endovascular Balloon Occlusion of the Aorta in Medical Cardiac Arrest
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Study Objectives: The objective of this study is to assess the feasibility of using bedside ultrasound to visualize and confirm aortic placement of resuscitative endovascular balloon occlusion of the aorta (REBOA) within an emergency medicine (EM)-initiated multi-disciplinary protocol in non-traumatic OHCA.

Methods: REBOA is a hemorrhage control technique involving the intra-vascular occlusion of the thoracic aorta using a balloon catheter and may help to increase coronary and cerebral perfusion during non-traumatic out-of-hospital cardiac arrest (OHCA) by directing blood flow to the upper body. We are conducting a single-arm early feasibility study of REBOA initiated in the emergency department (ED) for OHCA using an investigational device approval by the Food and Drug Administration (FDA) with an exemption from informed consent. During CPR, an emergency physician obtains common femoral access using a 7Fr introducer sheath while the REBOA catheter is prepared and subsequently advanced by an interventional radiologist (IR). While sheath introducer placement can be confirmed with ultrasound views of the common femoral artery, we seek to confirm intrathoracic REBOA placement using transthoracic bedside ultrasound. Our goal is to enroll 20 patients into this study and use transthoracic ultrasound to confirm REBOA placement in each.

Results: Two of the initial twenty patients were enrolled between January and February 2020, with a temporary pause in enrollment due to the COVID pandemic from March to July 2020. In both enrolled patients, transthoracic views were obtained confirming intra-thoracic aortic placement of REBOA by an emergency physician.

Conclusion: In our initial two cases, thoracic aortic placement of the REBOA in non-traumatic OHCA was confirmed by emergency physicians using transthoracic ultrasound. This demonstrates correct placement of aortic endovascular devices can be confirmed using emergency physician operated ultrasound. Further research is needed to determine what factors may impact emergency physicians’ ability to successfully identify and confirm aortic device placement.

171 COVID-19 Symptoms among Emergency Department Patients and Implications for Screening
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Study Objectives: With COVID-19 cases increasing nationally, there is demand for policies that can slow the spread of the virus. As businesses and health services begin
to relax restrictions, there are increased efforts to identify individuals who are most likely to have contracted the virus based on symptomology. One commonly employed screening method has been body temperature checks prior to being allowed entry to an establishment. The objective of this study was to assess both measured and self-reported body temperature among Emergency Department (ED) patients tested for COVID-19.

Methods: We conducted a multi-center, retrospective study among patients presenting to two EDs with a combined annual census of >80,000 (an urban level I trauma center and a suburban academic hospital). The study period included all ED encounters between March 10, 2020 (start of testing for COVID-19 in the ED) and May 25, 2020. We compared fever based on patient body temperature of ≥100.4 °F (measured in the ED) as well as subjective fever/chills complaints among patients with a positive COVID-19 test result (n = 235), a negative COVID-19 test result (n = 4412), and no COVID-19 testing performed (n = 8179). Odds ratios (OR) and 95% Confidence Intervals (CI) are presented for comparisons between patients with a positive and negative test result.

Results: Overall, 26.3% (n = 62) of patients who tested positive for COVID-19 presented with a recorded temperature of 100.4 degrees Fahrenheit or greater, compared to 7.5% of (n = 354) of patients who tested negative (OR = 0.89; 95% CI = 2.86-5.30). For reference, 1.1% (n = 91) of patients in which a COVID-19 test was not performed had a recorded temperature ≥100.4 degrees. Among patients who tested positive for COVID-19, 59.6% (n = 140) presented with a subjective fever and/or chills, compared to 26.8% (n = 1187) of patients who tested negative (OR = 4.03, 95% CI = 3.08-5.28). For reference, 6.1% (n = 505) of patients without COVID-19 testing reported subjective fever and/or chills. Among patients who tested positive for COVID-19, elderly patients ≥65 years of age were just as likely to have a recorded fever (OR = 0.72, 95% CI = 0.38-1.37) and self-reported fever (OR = 0.80, 95% CI = 0.46-1.38) as patients under the age of 65 years; although, among patients who tested negative for COVID-19, elderly patients were less likely to report a subjective fever (OR = 0.58, 95% CI = 0.49-0.68).

Conclusion: In this study of ED patients tested for COVID-19, we find that patients with a positive test result are more likely to have both a recorded and subjective fever. Further, nearly three quarters of the patients who tested positive were not identified as having a recorded fever of at least 100.4 degrees at presentation. Given this result, and the similarity between recorded and self-reported fevers in this study, self-report questions used in tandem with temperature checks should be explored for screening individuals prior to entry into general patient areas, as well as other businesses and facilities that rely on temperature screening for admittance.

172 Influenza Reporting in an Academic Health System
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Study Objectives: During the flu season, hospitals report daily flu patient numbers to county public health as part of community surveillance. The object of this study was to assess the magnitude, demographics, and mechanism of influenza under-reporting by the University of California San Diego Health System and to assess frequency of presenting chief complaints of the patients in both Emergency Departments (EDs) who tested positive for influenza.

Methods: This was a multicenter retrospective cohort study of patients who presented to the ED with an influenza-related chief complaint, was tested for influenza, a clinical impression of influenza or was prescribed Tamiflu between July 2019 and March 2020 at two tertiary care university hospitals in San Diego County. Influenza lab testing was ordered at the discretion of the health care provider but if ordered, these results were then included in a data set. Demographic characteristics are summarized for patients with a lab test ordered, patients with a clinical impression of influenza and patients with Tamiflu prescribed. Demographics characteristics are further summarized for patients who received a clinical impression (but not a lab test) for those with and without a Tamiflu prescription. ICD-9 codes were used to summarize diagnosis codes related to influenza. Descriptive statistics are presented.

Results: Between July 2019 and March 2020, of 9,831 patients with an influenza-related chief complaint, 581 tested positive for influenza. From December to January, there was a 150% increase in positive cases of influenza, going from 102 to 264 cases positive cases reported. Flu-like symptoms, cough and fever compromised the top 3 presenting chief complaints for patients who tested positive for influenza. Of the 9,831 patients, 121 did not receive a lab test but received a clinical impression and/or prescribed Tamiflu. The top chief complaints of those who did not receive a lab test but received clinical impression of influenza were flu like symptoms, fever, cough, and shortness of breath. Out of the 995 people that were admitted to hospital with respiratory infection only 148 (15%) were not tested for influenza whereas 252 of 573 cases that were admitted into hospital with cough were not tested for influenza.

Conclusion: In this study 581 tested positive for influenza, 21% of assumed influenza cases were not included in the count sent to health department indicating under-reporting may have occurred. Top presenting chief complaints of those positive for influenza were consistent with CDC’s defined symptoms of influenza.

173 Trauma Activations Are Associated with Decreased Time to Diagnosis & Treatment of Intracerebral Hemorrhage When Compared to Trauma Evaluations
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Study Objectives: Intracerebral hemorrhage (ICH) is a major complication from traumatic brain injury. The 30-day mortality rate is 35-52%, with half occurring within 24 hours. Early diagnosis leads to early treatment and potentially better patient outcomes. To expedite patient care, when injury severity meets institutional criteria, a trauma activation is called. Trauma activations are immediately roomed and evaluated by a multispecialty resuscitation team. A trauma evaluation occurs when injuries do not meet trauma activation criteria. Instead patients are triaged and assigned a room as one becomes available. Trauma evaluations potentially have increased wait times and increased length of stay. The objective of this study was to evaluate whether or not trauma activation patients with ICH were diagnosed more rapidly than trauma evaluation patients and to assess the impact of this diagnosis on the time to treatment in this population.

Methods: This was a retrospective cohort study of patients presenting to one of three trauma centers within a large hospital system between January 2018 and December 2018 who were diagnosed with acute traumatic ICH. Time to diagnosis, defined as minutes from patient arrival in the ED to computed tomography (CT) results received by treating provider, was evaluated between the two groups. Additional time points evaluated between groups were time to imaging, time to CT interpretation by radiology, and time to treatment of ICH. Demographics, patient medical history, and injury details were also abstracted. Categorical variables were described using frequencies and percentages and differences between groups were tested using Pearson chi-squared tests. Continuous variables are presented as median and standard deviation and differences between groups tested using t-tests.

Results: A total of 398 subjects met inclusion criteria for this study. Demographics and past medical history were similar and there was no difference in head abbreviated injury score, injury severity score, or anticoagulant use between groups. Trauma evaluation patients were older, predominately suffered a fall, and had an increased incidence of hypertension and chronic kidney disorder. Time to diagnosis was decreased for trauma activation compared to trauma evaluation patients (p < 0.0001). Additionally, median treatment time for trauma activation was 107 minutes compared to 184.5 minutes for trauma evaluation patients (p-value < 0.0001).

Conclusion: Diagnosis and treatment times for traumatic intracerebral hemorrhage were significantly faster in trauma activation patients when compared to trauma evaluation patients. Given the similarities in injury severity between the two groups, the increased time of treatment could have detrimental impact on the treatment of patients. While trauma activations are a resource heavy process, our data suggests that an intermediary process may be beneficial.

174 Evaluation of Undifferentiated Dyspnea with Point of Care Ultrasound Performed by Primary Emergency Department Physician Compared to a Dedicated Emergency Department Ultrasound Team
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Study Objectives: Undifferentiated dyspnea is among the most challenging emergency department (ED) presentations. Emergency physicians (EP) must often