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.

services. Secondary objectives were to categorize drug therapy recommendations based on therapeutic class of medication, determine the proportion of drug therapy recommendations associated with Institute for Safe Medical Practices (ISMP) high-alert medications, and assess the clinical significance of drug therapy recommendations.

Methods: This was a retrospective chart review conducted in three freestanding emergency departments that are part of a large health system. EM pharmacists provide on-site support at a tertiary care center ED as well as remote clinical coverage for the three FSEDs. Pharmacist interventions for FSED patients documented between 1/1/2017 and 12/31/2018 were eligible for inclusion. All eligible pharmacist documentation was abstracted from the health system EMR (Epic®) for further analysis by trained reviewers. Reviewers excluded documentation related to non-direct patient care, administrative activities, and educational activities and organized interventions into common themes (Table 1). Data was analyzed descriptively and proportions with 95% confidence intervals are reported. A random sample of interventions was reviewed by two independent reviewers using a previously published scale in order to assess clinical significance of interventions (severity of the medication error avoided by pharmacist intervention and the value of the service). A weighted Kappa statistic was calculated to assess inter-rater reliability.

Results: A total of 4313 pharmacist interventions met inclusion criteria. Classification of interventions is summarized in Table 1. Of 1664 drug therapy recommendations, a total of 1424 were linked to a therapeutic class of medications. For these 1424 drug therapy recommendations, the most frequently implicated therapeutic classes were antimicrobial agents (n=732; 51.4%), vaccines (n=168; 11.8%), cardiovascular agents (n=90; 6.3%), and analgesics (n=86; 6%). 11% of recommendations were associated with Institute for Safe Medical Practices (ISMP) high-alert medications. The most common high-alert medication categories were antithrombotic agents (n=51; 32.5%), insulin (34; 21.7%), and opioids (20; 12.7%). In assessing the clinical significance of interventions, 19.2% were rated as significant errors that were intercepted by pharmacists by both reviewers with moderate inter-rater reliability (κ=0.55; SE 0.09). For the value of service assessment, 59% of interventions were rated as significant by both reviewers but inter-rater reliability was only fair (κ=0.22; SE 0.05).

Conclusion: Emergency medicine pharmacists documented several types of interventions with approximately 20% of drug therapy recommendations associated with prevention of significant medication errors. Provision of remote telepharmacy services at freestanding emergency departments may represent a novel approach to help optimize patient care and safety.

Table 1. Classification of Pharmacist Interventions

Type of Intervention	Number	Percent (95% CI†)
Drug Therapy Recommendation	1664	38.6 (37.1-40.0)
Adherence to Hospital Drug Therapy Monitoring Policies	969	22.5 (21.2-23.7)
Telephone Correspondence for ED Culture Callbacks	770	17.9 (16.7-19.0)
Medication Order Clarification	534	12.4 (11.4-13.4)
Allergy / Adverse Drug Reaction Documentation	178	4.1 (3.6-4.8)
Drug Information	108	2.5 (2.1-3)
Formulary Adherence and Therapeutic Interchanges	90	2.1 (1.7-2.6)
Total	**4313**	**100%**

†Indicates 95% confidence interval

39 Emergency Department Visits for Serious and Painful Conditions Markedly Decreased after the Arrival of COVID-19

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Study Objectives: Our syndromic surveillance system of patient chief complaints from 35 emergency departments (EDs) in the New York City area showed a marked rise in respiratory disorders after March 10, 2020 as Covid19 arrived in our region. Shortly thereafter, total emergency department (ED) visits markedly decreased. Our goal was to determine whether ED visits also decreased for serious and painful conditions for which patients in most other circumstances would certainly have sought emergency care.

Methods: We used a retrospective cohort. The setting was EDs of 28 hospitals within 150 miles of New York City. Hospitals were teaching or non-teaching and rural, suburban or urban. Annual ED volumes were from 12,000 to 122,000.

Our population was consecutive patients seen by ED physicians between January 1 and April 30 in 2019 and 2020. We chose to compare monthly visits in 2020 to 2019 for total visits and visits for serious and painful conditions. We arbitrarily chose some serious and painful conditions: congestive heart failure (CHF), appendicitis, myocardial infarction (MI), transient ischemic attack (TIA), stroke (CVA), renal colic, and back pain. We then chose the visits using ICD-10 codes. We computed the changes in monthly visits from 2019 to 2020. We used chi-square to test for statistical significance. Using the Bonferroni correction for multiple comparisons, we set alpha at 0.002.

Results: The database contained 956,116 visits. In January and February 2020 (corrected for length of February in 2020) there was little change in total visits from 2019 [January + 7%, February +1%]. Total ED visits decreased after COVID-19 appeared in our region. In March and April 2020 compared to March and April 2019, ED visits dropped by 16% and 50% respectively. Compared to 2020, visits for serious conditions also decreased. In March and April, CHF decreased 22% and 66%, respectively. For appendicitis these values were 24 and 33%; for MI, 25% and 41%; for TIA, 36% and 62%; and for CVA, 40% and 46%. We also evaluated the decrease in visits for painful conditions. Renal colic visits decreased by 40% and 46% and back pain visits decreased by 49% and 81%. All p-values for comparisons were statistically significant, $p < 0.0005$.

Conclusion: In March and April 2020, there was a decrease in ED visits after Covid-19 arrived in our area. This was also associated with a marked decrease in visits for both serious as well as painful conditions, suggesting that many patients with these conditions did not seek medical care. We suspect this is due to reluctance to come to the ED because of recommendations for quarantine and fear of being exposed to the virus.

40 Racial Disparity and Covid-19 Outcomes: An Emergency Department Study

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Study Objectives: The effects of COVID-19 on racial groups is still emerging, however a recent report from the Centers for Disease Control and Prevention (CDC) suggests that there may be a disproportionate rate of severity of disease presentation in racial and ethnic minority groups. Health differences have been attributed to economic and social conditions that are more prevalent for racial minorities. These conditions can cause isolation from resources necessary to combat the outbreak. We suspect that these factors that may contribute to increased Covid-19 exposures, that lead to a greater rate of infection and increased risk of severe disease in minority groups

Methods: Data collected from three ED, all sites of an emergency medicine residency. Included are patients with SAR-CoV-2 testing done in the ED. Excluded were patients less than 18, pregnancy, and missing data. Race was categorized into White-Caucasian (W), African-American (B), Latinx (L), and others including multi-racial (O). COVID co-morbidities were defined as hypertension, diabetes, chronic obstructive pulmonary disease or asthma, sleep apnea, congestive heart failure, coronary artery disease, end-stage renal disease, diabetic kidney disease, liver disease, venous thrombosis, cancer, HIV, and immune-compromised. 5% of patients' select variables were manually re-abstracted with a Kappa of 100%. Significance (alpha=0.05) was tested using Student-t, ANOVA, and Chi-squared as appropriate. Logistic regression was used to determine the independent effect of race on outcomes.

Results: 5489 cases met inclusion/exclusion criteria. SAR-CoV-2 was detected in 1849 (33.7%). Tested racial diversity was 37.9% W, 20.0% B, 33.5% L, and 8.6% O. There was significant racial disparity in the positivity rate (W: 25.0%, B: 31.9%, L: 43.8%, O: 36.7%; p<.001). Hospitalized were 1112 (60.1%) positive patients with mean age of 67.7, 42.4% female, acuity 2.49 (1-5, 1 worst), and racial diversity W: 36.8%, B: 19.3%, L: 35.9%, O: 8.0%. As of 6-5-2020, there were 265 deaths (23.8%) and 180 placed on ventilators (16.2%) with a combined mortality morbidity (MM) of 359 (32.3%). Age (p<0.001), acuity (p<0.001), co-morbidities (p=0.003), and race (p<0.001) were all significantly associated with mortality. On logistic regression, age (OR=1.049; p<0.001), sex (OR=0.647; p=0.008), and acuity (OR=0.434; P<0.001) were significant predictors of mortality. There were significant mortality differences among races (B v W, OR=0.566; p=0.021, L v W, OR=1.050; p=0.817, O v W, OR=0.866; p=0.630). Significant racial differences were also found for ventilator need (B v W, OR=0.792; p=0.433, L v W, OR=2.24; p=0.001, O v W, OR=1.71; p=0.110). Co-morbidities were not significant when controlled for age and other confounders.

Conclusion: Our findings showed minority groups were more likely to have a positive COVID-19 test. Latinx patients were more than twice as likely to require intubation compared to white patients. Age, Sex, Triage Acuity Level, and non-White Race were significantly associated with mortality. This data suggests non-White patients are more likely to contract and suffer from Covid-19. These findings show minority groups have a greater need for ventilators and other resources associated with severe Covid-19. In the event of resource shortages, they should be directed to minority communities.

	Mortality				Ventilator			
			95% C.I.for OR				95% C.I.for OR	
	p-value	OR	Lower	Upper	p-value	OR	Lower	Upper
Age	<0.001	1.049	1.036	1.062	0.001	0.979	0.967	0.991
Sex F vs M	0.008	0.647	0.469	0.892	0.002	0.554	0.381	0.806
Race	0.082				<0.001			
Race B vs W	0.021	0.566	0.348	0.918	0.433	0.792	0.443	1.418
Race L vs W	0.817	1.050	0.692	1.594	0.001	2.240	1.391	3.606
Race O vs W	0.630	0.866	0.482	1.556	0.110	1.709	0.886	3.296
cc SOB	0.115	1.287	0.940	1.762	0.020	1.520	1.069	2.162
cc Cough	0.187	0.779	0.537	1.129	0.252	1.261	0.848	1.877
ED level	<0.001	0.434	0.326	0.577	<0.001	0.365	0.261	0.508
Hypertension	0.546	0.874	0.564	1.354	0.026	0.561	0.337	0.934
Diabetes	0.934	1.018	0.674	1.536	0.213	0.740	0.460	1.189
CAD-MI	0.544	0.859	0.525	1.405	0.004	0.379	0.197	0.731
CKD	0.402	1.276	0.721	2.256	0.068	0.514	0.251	1.050
Cancer	0.431	1.251	0.717	2.183	0.985	1.006	0.531	1.907
Number co-morbidities	0.383	1.110	0.878	1.403	<0.001	1.673	1.275	2.195
Site	<0.001				0.001			
Site 2 vs 1	0.005	1.735	1.181	2.550	0.689	1.098	0.695	1.735
Site 3 vs 1	0.159	0.726	0.465	1.133	0.001	0.455	0.281	0.735
Constant	<0.001	0.082			0.004	6.020		

41 Clinical Outcomes among COVID-19 Patients Taking Non-Steroidal Anti-Inflammatory Drugs

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Study Objectives: Concerns over the use of non-steroidal anti-inflammatory drugs (NSAIDs) for the management of fever and myalgia in COVID-19 patients were raised after four cases of critical illness in young, otherwise healthy patients who took NSAIDS were observed in France. France's health minister subsequently made a recommendation to use acetaminophen in lieu of ibuprofen. However, the association between NSAID use and outcomes in COVID-19 illness has not been adequately studied. The objective of this study is to determine whether an association exists between prior NSAID use and COVID-19 illness severity.

Methods: We performed a single-center retrospective cohort study of consecutive adult patients diagnosed in the emergency department (ED) with PCR confirmed SARS-Cov-2 infection. NSAID use was ascertained based on a review of the medication list found in patients' electronic medical records. Our primary outcome was critical COVID-19 illness, defined as a composite of death, respiratory failure requiring intubation, and shock requiring vasopressors, occurring within 28 days of ED presentation. We modeled the association between NSAID use and our primary outcome using logistic regression, and adjusting for hypertension, diabetes, asthma, chronic obstructive pulmonary disease (COPD), other chronic lung disease, obstructive sleep apnea, immunocompromised status, angiotensin converting enzyme inhibitor (ACE-I) or aldosterone receptor blocker (ARB) use, anticoagulation use, and immunosuppressant use.

Results: Among the 422 patients studied, 88 (21%) were on NSAIDS prior to acquiring COVID-19 and a total of 89 patients (21%) developed critical COVID-19 illness within 28 days of ED presentation. Among those using NSAIDs, 18 (20%) developed critical illness. Of the 11 predictor variables examined, hypertension (odds ratio = 1.04 (95% CI: 0.38 - 1.71)), diabetes (0.97 (95% CI: 0.42 - 1.52)), and chronic lung disease (1.20 (0.20 - 2.20)) were significantly associated with increased risk of critical COVID-19 illness (Table 1). NSAID use was not found to be an independent predictor of critical COVID-19 illness (odds ratio = 0.05 (95% CI; -0.57 - 0.73).

Conclusion: To our knowledge, this is the first study of the association between NSAID use and critical COVID-19 illness. Our results demonstrate that NSAID use does not significantly increase the risk of critical COVID-19 illness. This study is limited by lack of prospective ascertainment of NSAID use. Prospective evaluation of evaluate outcomes among COVID-19 patients with NSAID use is warranted.

Predicting adverse outcomes among patients with COVID-19 using past medical and medication history

	Estimated Effect Size on Adverse Outcome (95% CI)	p
Past Medical History		
Hypertension	1.04 (0.38 - 1.71)	0.0021*
Diabetes	0.97 (0.42 - 1.52)	0.0005*
Asthma	-0.15 (-0.82 - 0.53)	0.6655
COPD	-0.04 (-0.84 - 0.76)	0.9199
Chronic Lung Disease	1.20 (0.20 - 2.20)	0.0185*
Obstructive Sleep Apnea	0.09 (-0.58 - 0.75)	0.7984
Immunocompromised	0.42 (-0.48 - 1.32)	0.3577
Medications		
ACE-I or ARB	-0.31 (-0.90 - 0.29)	0.3158
Anticoagulation	0.31 (-0.25 - 0.88)	0.2804
Immunosuppressant	-0.38 (-1.48 - 0.72)	0.5009
NSAID	0.08 (-0.57 - 0.73)	0.8182

*$p<0.05$

42 Advanced Fibrosis Is Unlikely in the Majority of Patients from an Appalachian Emergency Department's Non-Targeted Hepatitis C Virus Screening

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Study Objectives: We have previously demonstrated a high prevalence of Hepatitis C Virus (HCV), particularly among young, publicly insured patients, reflecting the escalating syndemic of opioid injection and HCV transmission. We aim to describe the degree of hepatic fibrosis among patients with evidence of HCV infection identified from an adult academic emergency department (ED) non-targeted HCV screening program.

Methods: The study was a retrospective cohort analysis of ED systematic, non-targeted, opt-out HCV testing outcomes from July 2018 through January 2019. To assess the degree of liver disease as evidenced by fibrosis, Fibrosis-4 (FIB4) and aspartate transaminase to platelet ratio (APRI) scores were calculated from available AST, ALT and Platelet lab values pulled from the electronic medical record, collected on the same day as the initial ED visit. The absence or presence of advanced fibrosis or cirrhosis was determined using validated cut-offs: FIB4 < 1.45, APRI < 1; FIB4 > 3.25, APRI > 2 respectively.

Results: As previously reported there were 21,359 unique adult visitors during the time period studied. Of these, 16,700 individuals were verbally engaged and did not opt out of testing. A total of 11,635 individuals received HCV Ab testing with 1,459 patients (12.5%) having reactive results. Newly identified information shows that 1,241 (85%) of these patients had concomitant labs as part of routine ED care sufficient to calculate a FIB4 and APRI score. Data indicate that advanced fibrosis or cirrhosis was not likely in the majority of patients (FIB4 56%, 707/1241 patients; APRI 72.6%, 901/1241 patients). Those with available FIB4 and APRI were more likely to be born after 1965 (857/1241 patients, 69.1%), of whom 90.9% (779) had government insurance or were uninsured (Medicaid 85.6%, 667 patients; Medicare 8.5%, 66 patients; Uninsured 5.9%, 46 patients). Of these, advanced fibrosis or cirrhosis was not likely in the