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Prior studies have demonstrated increased emergency department (ED) asthma visits among residents living in poor-quality housing. Interventions to improve housing conditions have been shown to reduce ED asthma visits, but identification and remediation of poor housing conditions is often delayed or does not occur. This study evaluates whether ED asthma visits can be used to identify poor quality housing to support proactive and early intervention.

Methods: We conducted a retrospective cohort study of children and adults living in and around New Haven, Connecticut, USA seen for asthma in an urban, tertiary ED from 2013 to 2017. We geocoded and mapped patient addresses to city parcels and calculated a composite asthma ED utilization incidence rate for each parcel. We conducted linear and random forest regression analyses adjusting for neighborhood and individual factors contributing to ED utilization for asthma and evaluated whether there was a correlation between asthma burden and public housing complex inspection scores from standardized home inspections which are conducted every 1 to 3 years on publicly funded housing.

Results: There were 11,429 asthma-related ED visits from 6,366 unique patients in the analysis. Mean patient age was 32.4 years old; most were female (60.3%), over half (57.2%) Medicaid insured, and 41.6% were Black. Asthma ED utilization incidence rates were strongly correlated with lower housing inspection scores (Pearson’s $R=0.55$, 95% CI: [0.70, 0.35], $p<0.0001$, Figure 1A) which persisted after adjustment for patient and neighborhood demographics using linear ($R=0.54$, [0.69, 0.33], $p<0.0001$, Figure 1B) and non-linear regression models ($R=0.44$, [0.62, 0.21], $p=0.0004$, Figure 1C). Adjusted asthma incidence rates were elevated above the 90th percentile city-wide on average a year before a housing complex received a failed housing inspection. Sensitivity analysis showed improved performance for larger $n$ (assessed by correlation with minimum HUD inspection score for each parcel) up to a maximum of $R=0.79$ ($n=10$). This indicated that while the model performs well across all parcels, it is most accurate for parcels where many patients are observed.

Conclusion: ED asthma visits are a leading indicator of failed housing inspections approximately a year before a failed housing inspection. This represents a novel method for the early identification of poor housing conditions and may help reduce asthma-related morbidity and mortality.

Figure 1. Association of ED asthma visit rates and HUD physical inspection scores.

A

| Complex | Minimum REAC Score | Maximum REAC Score |
|---------|---------------------|--------------------|
| A       | 62                  | 35                 |
| B       | 48                  | 35                 |
| C       | 45                  | 35                 |
| D       | 42                  | 35                 |

Adjusted (linear) asthma ED utilization IR

Adjusted (nonlinear) asthma ED utilization IR

$R=0.55$, 95% CI: [0.70, 0.35], $p<0.0001$.

No, authors do not have interests to disclose

Mapping Emergency Department Asthma Visits to Identify Poor Quality Housing

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Background: Housing conditions are a key driver of asthma incidence and severity. Prior studies have demonstrated increased emergency department (ED) asthma visits among residents living in poor-quality housing. Interventions to improve housing conditions have been shown to reduce ED asthma visits, but identification and remediation of poor housing conditions is often delayed or does not occur. This study evaluates whether ED asthma visits can be used to identify poor quality housing to support proactive and early intervention.

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No, authors do not have interests to disclose

A Remote Monitoring Program for Patients Discharged from the Emergency Department With Mild to Moderate COVID-19 Infection

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Study Objectives: Our hospital system initiated a remote monitoring program to provide emergency physicians with a non-admission pathway for COVID-19 patients with either moderate disease or mild disease with risk factors for adverse outcome, respectively. We sought to describe the program and evaluate subsequent admission rates for a cohort of COVID-19 patients enrolled for monitoring.

Study Design/Methods: This was a secondary analysis of a prospectively collected database from 11 facilities within a hospital system. We included consenting, adult patients diagnosed with moderate COVID or mild disease with high risk features that were discharged from the ED from July 2020-September 2021 following enrollment in a remote monitoring program. The treating physician made the disposition and enrollment decisions as well as arrangements for home oxygen at her/his discretion. Patients were ineligible if they did not have a smartphone or tablet with messaging capability. Program managers provided in-person education and follow-up appointment assistance. Within a dedicated app, patients answered questions for the COVID dyspnea survey and self-reported pulse ox and temperature, respectively, twice-a-day. Patients receiving automated medium/high alert messages based on their response also received in-app messaging and a clinical assessment telephone call. Monitoring was discontinued after 14-days at home or if the patient was directed to return to a hospital. Follow-up phone calls were made to participants to determine if they were admitted to a hospital outside our system. Trained data abstractors recorded patient data into a structured spreadsheet. COVID-related subsequent admission was determined using ICD-10 diagnostic codes. Categorical data was analyzed by chi-square; continuous data by t-tests. We performed a multivariate logistic regression analysis to control for confounding. The primary outcome parameter was to assess the proportion of patients discharged from the ED after enrollment in the program who subsequently returned to the hospital for admission.

Results/Findings: There were 379 patients in the cohort; 53% female, mean age 45.9+/−14 years, 59% Hispanic, and 36% were self-pay. 8.2% of patients enrolled in the monitoring program were subsequently admitted to the hospital, 95% CI [5.8,11]. Bivariate analysis revealed no significant differences for patients who were not subsequently admitted vs. admitted to the hospital with respect to: mean age (45.6+/−14.6 vs. 49.7+/−12.2 years; p=0.13), sex (7.4% vs 8.9%; p=0.061), race (p=0.001), and insurance type (p=0.71). There was a difference in the admission rate between the 11 hospitals with rates ranging from 3.4% to 16% (p=0.045). Within a multivariate logistic regression model, we found no association between return for admission and the majority of dependent variables. However, the relationship for return admission remained significant with respect to facility and specifically for the two hospitals with the highest admission rates (p=0.012 and p=0.005 respectively).

Conclusion: Overall, remotely monitored COVID-19 patients within our cohort that were treated and discharged from the ED had a return for admission rate (8.2%) consistent with prior reports for patients without such programs. However, there was...
Study Objectives: Overdoses are now the leading cause of injury-related death in the United States with recent increases influenced by multiple factors including the COVID-19 pandemic. Among the most recent overdose deaths, about 75% involved a prescription or illicit opioid. Naloxone can rapidly reverse fatal overdose and evidence shows reduced mortality when naloxone is available in the community. Although emergency physicians are generally willing to prescribe naloxone to patients at risk of opioid overdose, prescriptions remain uncommon. We hypothesize that the implementation of a Best Practice Advisory (BPA) alert within the electronic medical record (EMR) can increase the number of naloxone prescriptions given to high risk patients within the emergency department (ED).

Study Design/Methods: In this retrospective chart review, we measured the number of naloxone prescriptions in a 5-month period prior to the initiation of the BPA and compared that to the number of naloxone prescriptions in the 5-month period after the initiation of the BPA. The chart review was inclusive of 9 EDs across a health system with a total annual volume of 450,000 visits per year. We also quantified the total number of BPA triggers and the action taken by the type of ED clinician. For the purposes of this study, we included physician, resident, physician assistant and nurse practitioner. The BPA was designed to prompt a prescription for naloxone for patients at-risk for opioid overdose that meet criteria including: patients prescribed opioids with comorbidities including chronic lung or heart disease, opioid use disorder, history of opioid overdose, and those with an opioid prescription greater than 50 morphine milligram equivalents per day.

Results/Findings: In the 5-month period after naloxone BPA initiation, there were 740 naloxone prescriptions. This compares to 180 naloxone prescriptions in the 5-month period prior to initiation of the BPA, a 311% increase in naloxone prescriptions after BPA initiation. The BPA fired 2,450 times after initiation and the clinician clicked to “accept” the BPA 1,428, a 58.3% acceptance rate. The rates of ED clinicians clicking “accept” who encountered the naloxone BPA by the type of ED clinician were as follows: physicians (56.5%), residents (67.2%), physician assistants (54.8%), nurse practitioners (42.5%).

Conclusion: Increasing naloxone availability should be considered an important part of a multi-pronged approach to combatting our current opioid epidemic. BPAs within the EMR could be a low-cost, effective intervention to increase naloxone prescription rates for patients at-risk for opioid overdose in the ED. Further investigation is needed to determine pharmacy fill rates of naloxone prescriptions and understand clinician perspectives toward naloxone prescription in order to characterize the most effective model for naloxone distribution.

No, authors do not have interests to disclose

36 Stop the Vomit: Haloperidol as a Superior First-line Antiemetic
McCoy J, Godfrey S, Heitjig B, Kinkier B, Buth K, Edwards J, Mills L, Root B, Warchok R, Yu J/Western Michigan University SOM, Kalamazoo, Michigan, US

Study Objectives: Nausea and vomiting are common chief complaints when presenting to the emergency department (ED). Ondansetron has become a first-line antiemetic in the ED due to perceived efficacy, safety, and low risk of adverse side-effects despite a lack of substantive evidence of superiority. Haloperidol is a typical antipsychotic medication, acting as a dopamine (D2) antagonist that has efficacy in treating nausea, vomiting, and headache in a variety of ED conditions including migraines, headache, cannabis hyperemesis syndrome and diabetic gastroparesis. Our objective is to evaluate the efficacy of haloperidol and ondansetron on undifferentiated nausea and vomiting in ED patients. Secondary outcomes include comparisons of analgesic effects, QT prolongation, efficacy in cannabis users, and adverse side-effects.

Methods: This study is a randomized, double-blind, non-inferiority trial of patients aged 18-55 between April 2021 and March 2022. A convenience sampling of patients meeting inclusion criteria were randomly assigned to either the haloperidol or ondansetron groups. Patients were excluded if any of the following were present: abnormal blood pressure (>200/100mmHg or <90/40mmHg), fever (>100.4F), acute trauma, QT > 450ms on cardiac monitor, altered mental status (GCS < 15), chest pain, allergy to haloperidol or ondansetron, Parkinson’s disease, pregnancy or lactation, use of any antiemetic in the previous 8 hours, nausea and vomiting associated with vertigo, prisoners or any wards of the state. Patients were randomized to receive either 2.5mg of haloperidol intravenous (IV) or 4mg IV ondansetron. Symptoms were evaluated at time of enrollment and at 30-, 60-, and 90-minutes post-treatment using a validated Visual Analogue Scale (VAS) with side-effects evaluated concurrently. QT interval was evaluated at enrollment and 90 minutes post-treatment. After 90 minutes, all further treatment was determined by the primary ED physician at their discretion. Patients were contacted after 24 hours to collect follow-up data. Alpha value was set at 0.025 and all results showing non-inferiority were tested for superiority.

Results: Of 384 patients evaluated for inclusion, 312 were excluded due to screening criteria and 48 completed the study. 22 patients were randomized to haloperidol and 26 to ondansetron. Background data, initial nausea, and initial pain scores were statistically similar between groups at enrollment. Haloperidol was found to be superior to ondansetron in treatment of nausea at 90 minutes (p = 0.0178) with reduction in median nausea VAS of 6.5 (7 to 0.5) compared to 3 (6 to 3) in the ondansetron group. Haloperidol was also found to be superior to ondansetron in treatment of abdominal pain at 90 minutes (p = 0.0006) with reduction in median VAS pain score of 5 (5 to 0) compared to 2.5 (6 to 3.5). No difference in QT interval change was found between haloperidol and ondansetron groups (p=0.45). Haloperidol was not found to be superior to ondansetron in reducing nausea in cannabis users (p = 0.0385) at 90 minutes post-treatment.

Conclusion: This study presents novel data that haloperidol 2.5mg IV is effective and superior to ondansetron at treating nausea and pain in undifferentiated adult patients in the emergency department. This study also shows that there is no difference in QT prolongation among the two medications.